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UFM-B UFM-F UFM-L NTEP Bench Scales

Maintenance Manual

MAINTENANCE MANUAL

UFM SERIES

NTEP & MEASUREMENT CANADA

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JANUARY 2005 REV 2

Specifications and Function Subject to Change without Notice

1. INTRODUCTION

The UFM series is designed and programmed according to NTEP and Measurement Canada requirements.

These indicators are sealed to prevent unauthorized access to internal parts. End users should be advised not to undertake any trouble shooting except those listed in the operation manual.

This maintenance manual contains of certain information that may result in fraudulent use. Do not release any part of this manual to any end users or un-authorized persons.

The internal mini jumper should be so set to prevent un-authorized settings or alterations.

If a load cell has been replaced, make sure that the protection devices are correctly set.

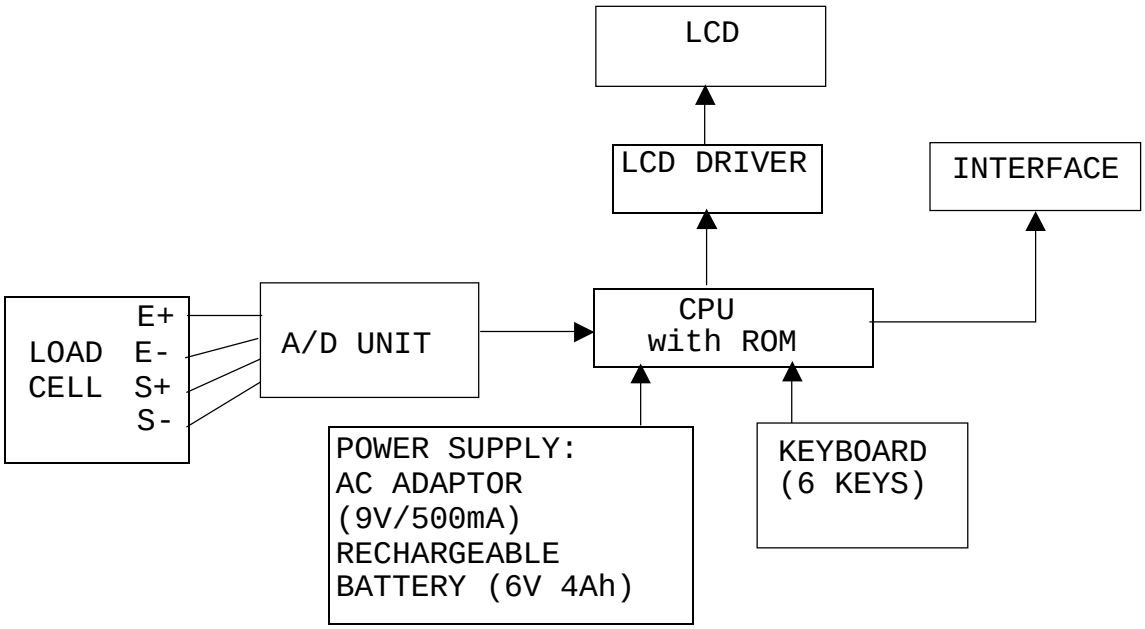
After servicing, it is necessary to go through all tests and procedures to ensure the indicator meets all the meteorological and approval requirements.

Features of the UFM series

1. Designed to meet NTEP & MEASUREMENT CANADA requirements.
2. Zero Indicator.
3. Tare Indicator.
4. Full Tare Function (Subtractive)
5. Negative Value Indicator.
6. Auto Tare Function.
7. Power on Zero Function.
8. Manual Zero Function.
9. Average Function.
10. Auto Power Saving Function.
11. Metric/Avoirdupois Conversion Function (where it is legal for use).
12. Large Size WTN LCD display, 5 ½ x 51mm.
13. Low Battery Warning Signal.
14. 2 Point Calibration.
15. Mini Jumper to Prevent End-user Calibration.
16. Optional EL Backlight.
17. Optional Printer and RS232C Interface.
18. Accumulation Function Available.
19. Built-in Rechargeable Battery Operated.
20. Battery Operating time: 200 Hours Plus with Full Charge.
21. Gravity Compensation Software

2. SPECIFICATION

2.1 SYSTEM BLOCK DIAGRAM

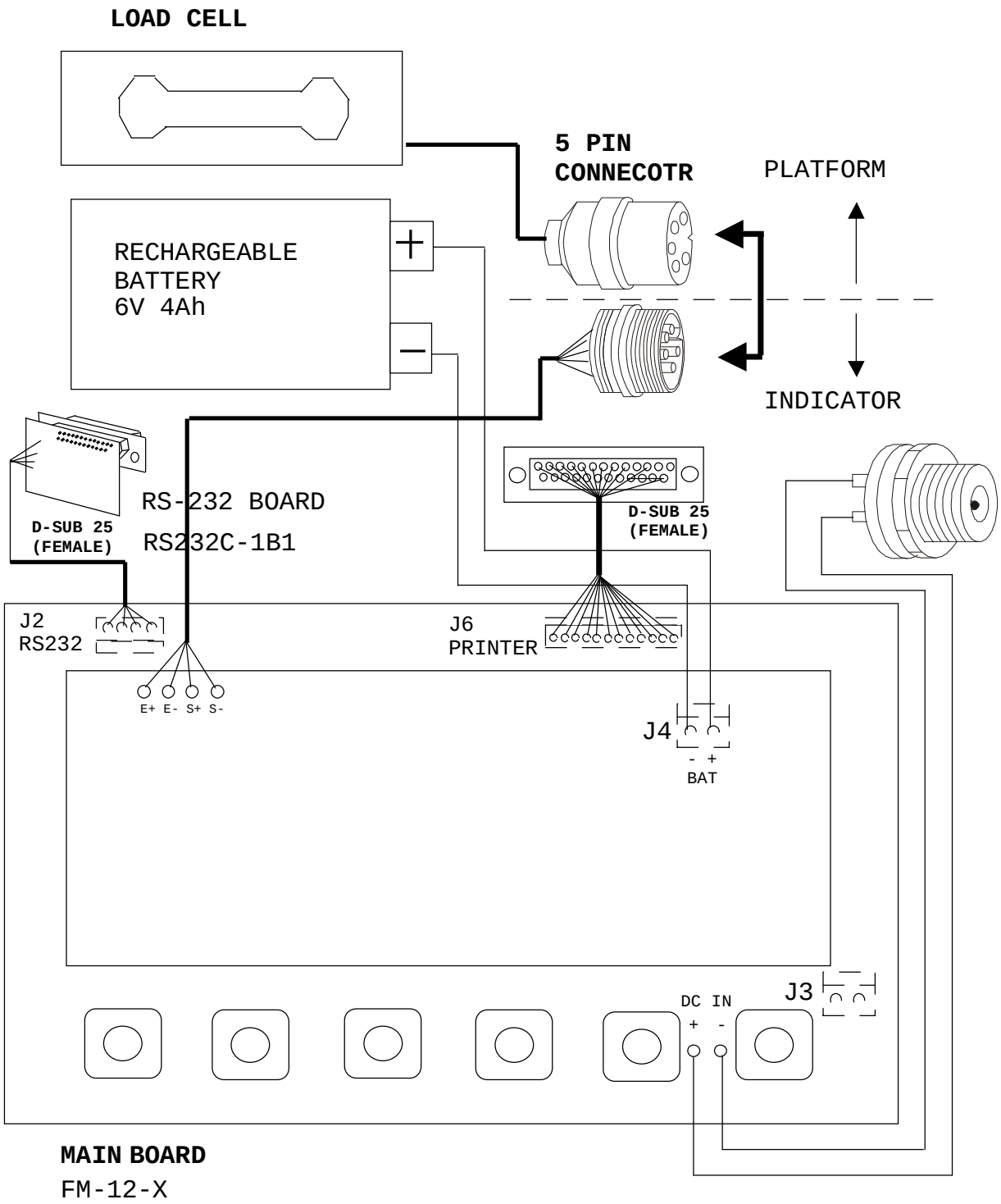


Description:
When a mass is placed on the platform, the load of the article is transferred to the load cell inside.

The resistance to the excitation current in the strain gauge will then be changed and the analog output signal varies in proportion to the load applied.

It is amplified and digitized continuously by the A/D converter into a digital signal. Subsequently, the resulting count is processed and managed by the CPU. The CPU refers to the instructions from the keyboard, and then conveys the output data to LCD driver, which formats the data into a readout on the display panel.

2.2 PHYSICAL LAYOUT OF ELECTRICAL CONNECTION

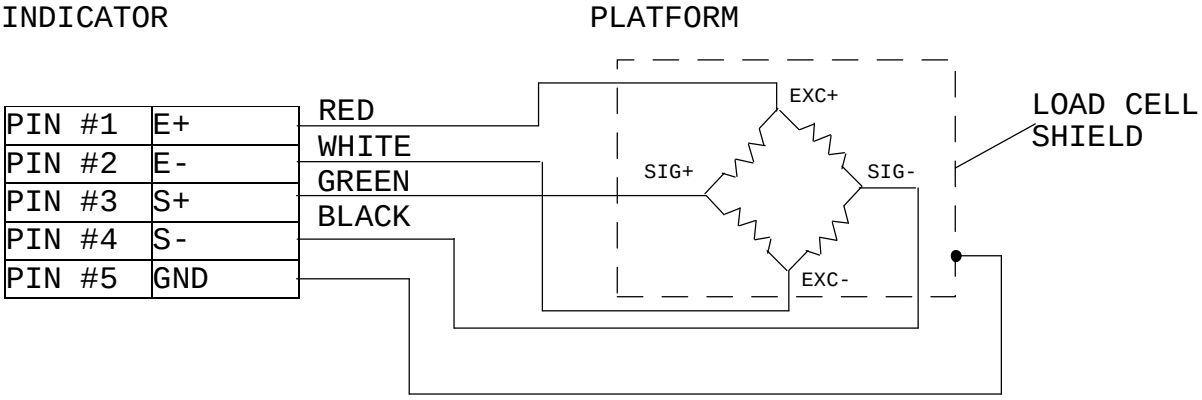


2.2.1 CONNECTION BETWEEN INDICATOR AND PLATFORM(5 PIN ROUND CONNECTOR)

PIN ASSIGNMENT

INDICATOR

PIN #1	E+
PIN #2	E-
PIN #3	S+
PIN #4	S-
PIN #5	GND



2.2.2 CONNECTION OF RS-232 BETWEEN INDICATOR AND PC(25PIN D-SUB)

PIN ASSIGNMENT

INDICATOR(25PIN D-SUB,FEMALE)		PC(25PIN D-SUB,MALE)	
PIN #1	SHIELD	PIN #1	SHIELD
PIN #2	RXD	PIN #2	TXD
PIN #3	TXD	PIN #3	RXD
PIN #4	RTS	PIN #4	RTS
PIN #5	CTS	PIN #5	CTS
PIN #6	DSR	PIN #6	DSR
PIN #7	GND	PIN #7	GND
PIN #8	DCD	PIN #8	DCD
PIN #20	DTR	PIN #20	DTR

** RTS & CTS have been shorted internally.
BAUD RATE： 4800, 9600 (DEFAULT), 19200
Protocol: N81 (DEFAULT), E71
Code： ASCII
Data output: Continuous (DEFAULT) or, * M+/MC key

* Press M+ to output a reading of individual transaction.
* Press MC to output the total of readings.

2.2.3 Parallel Printer Interface (D-SUB 25 pin)

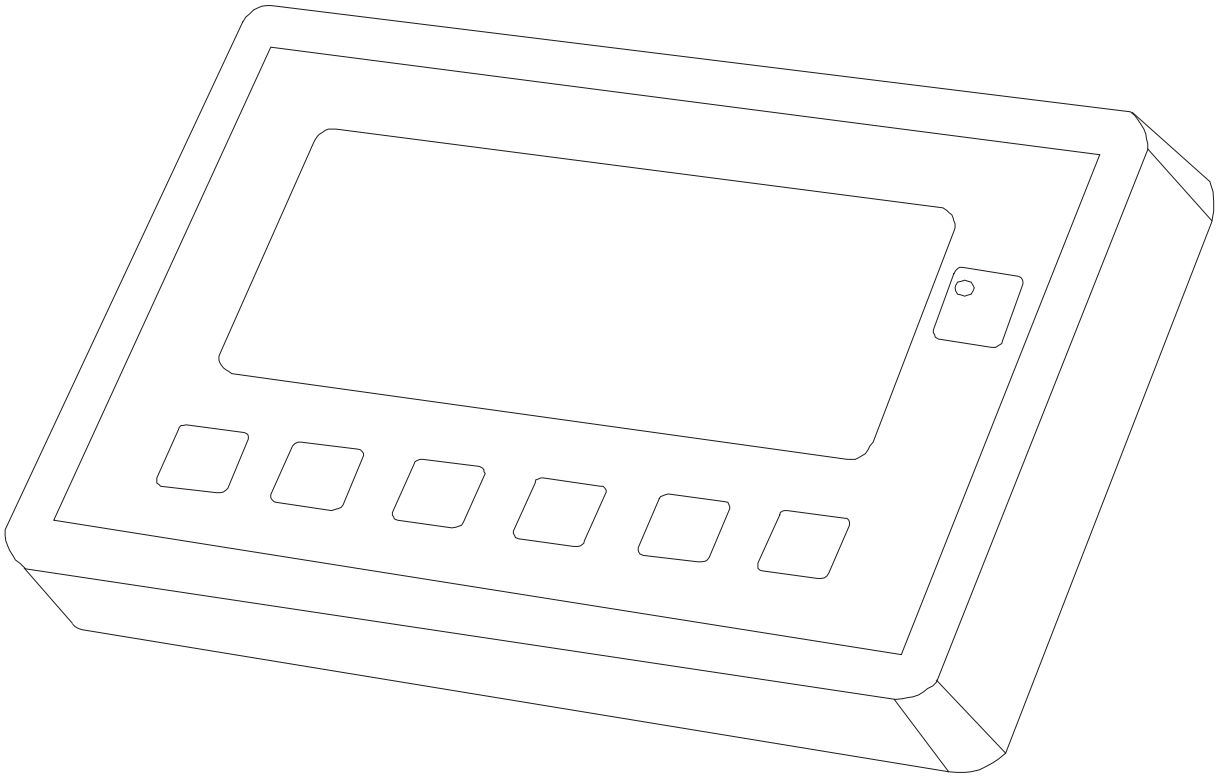
PIN ASSIGNMENT

PIN NUMBER	ASSIGNMENT	PIN NUMBER	ASSIGNMENT
1	STROBE	7	D5
2	D0	8	D6
3	D1	9	D7
4	D2	11	BUSY
5	D3	25	GND
6	D4		

2.3 GENERAL SPECIFICATION

2.3.1 Overall View

UFM SERIES



Indicator Dimension

UFM-B = 250(W) x 80 (D)mm x 150(H)
UFM-F/L = 250(W) x 130(D)mm x 150(H)

Overall Dimension

UFM-B = 330(W) x 450(D) x 750(H)mm
UFM-F = 420(W) x 520(D) x 880(H)mm
UFM-L = 500(W) x 600(D) x 880(H)mm

2.3.2 Model Specifications

Model No.	Capacity (Max)	Readability (e)	Platform
UFM-B30	30kg/60lb	0.01kg/0.02lb	330 x 450mm
UFM-B60	60kg/120lb	0.02kg/0.05lb	
UFM-B150	150kg/300lb	0.05kg/0.1lb	
UFM-F60	60kg/120lb	0.01kg/0.02lb	420 x 520mm
UFM-F120	120kg/250lb	0.02kg/0.05lb	
UFM-F300	300kg/600lb	0.05kg/0.1lb	
UFM-L60	60kg/120lb	0.01kg/0.02lb	500 x 600mm
UFM-L120	120kg/250lb	0.02kg/0.05lb	
UFM-L300	300kg/600lb	0.05kg/0.1lb	
UFM-L600	600kg/1200lb	0.1kg/0.2lb	
Class	III		
Maximum Tare Range	Full Tare Range (Subtractive)		
Power on Zero Range	±10% Max		
Manual Zero Range	±2% Max		
Minimum Load	20e		
Operation Environment	0^{o}~40^{o}C (32^{o}~104^{o}F), Non-condensed. R.H.≦85%		
Power Consumption	0.1W		

2.3.3 Main Components Used

Microprocessors: SM8958A
Crystal Oscillator: 11.0592MHz
Display Device: WTN Liquid Crystal Display

2.3.4 Analog Specification

- Electronic, self-indicating device, with single [- or multi] - interval indication. The maximum number of verification scale intervals will be:

  n ≤ 6000 for class (III) instruments or

  n ≤ 1000 for class (IIII) instruments.

- Power supply of 5 V DC;
- Minimum signal voltage per verification scale interval is 1.5 μV;
- 16 bits serial digital output;
- Excitation power supply for the load cell is 5 V DC;
- Minimum input impedance of the load cell is 85 Ω;
- Maximum cable length for the connection between the indicator and the junction box or load cells (when more then one load cell is connected) is 1 m/mm^2.
- The analog data processing unit is built in a closed metal box.

2.4 INTERNAL SETTINGS AND CALIBRATION METHODS

12 internal settings are available as below table.

Function	**Symbol**	**Description**
1	F1	Offset value reading
2	F2	Full LCD display segment checking
3	F3	Span value reading/Configuration Setup
4	F4	Auto power off setting
5	F5	RS-232 transmission setting
6	F6	Average function setting
7	F7	Data output setting
8	F8	Printout format setting
9	F9	Auto tare function setting
10	F19	1/30000 verification mode
11	F20	C.G.- gravity of calibration location
12	F21	U.G.- gravity of location of installation

2.4.1 How to Enter the Functions Required

a. Press and hold **TARE** and turn scale on by pressing **ON/OFF**
b. The scale shows **F1**
c. Press **TARE** until the desired function number appears
d. Press **MODE** to enter selection
e. Press **TARE** to save and continue selection
f. Press **ZERO** to quit to restart the scale

2.4.2 Offset Value Reading (F1)

a. Remove all loads from platform
b. Enter **F1** through procedures as described in **2.4.1**
c. The display shows the offset value

2.4.3 Full Segment Display (F2)

a. Refer to the **2.4.1** on how to enter **F2**
b. All display segments will light up
c. Check all digits and arrow indications to verify any defects or errors
d. Press **TARE** to quit

2.4.4 Span Value Reading/Configuration Setup (F3)

The UFM series is designed according to NTEP and Measurement Canada requirements with maximum resolution legal for trade at 1/6000. It is also approved for 1/3000 so users can choose the preferred resolution depending on the working environment.

When type **NTEP** (legal for trade mode) is selected, the rated capacity will be limited to maximum of 1/6000. When type **normal** (not legal for trade mode) is selected, the rated capacity will be allowed for a maximum of 1/30000. The indicator also provides option for dual intervals when set.

TO ENTER FUNCTION

a. Refer to the **2.4.1** on how to enter **F3**
b. Press **MODE** to select **tYPE** (NTEP or normal), **unit** (metric only or metric/imperial conversion support), **dP** (decimal point), **CAP2** (capacity and readability), **CAP1?** (for dual interval, only allowed when **type** is set in normal mode).

TO SET TYPE (Select between NTEP and non NTEP application)

a. Press **M+** when display shows **tYPE** and select the operating type of **ntEP** or **norm** for normal
b. Press **MODE** to save and continue setup

TO SET WEIGHING UNIT

a. Press **M+** when display shows **unit** and select the weighing unit of **kg**, **g**, **lb kg** or **lb g**. When it is set **kg** or **g** only, scale will only display result in metric form, but when set to **lb kg** or **lb g**, scale will allow metric/imperial conversion
b. Press **MODE** to save and continue setup

TO SET DECIMAL POINT

a. Press **M+** when display shows **dP** and select the decimal place from NIL to 3 decimal place
b. Press **MODE** to save and continue setup

TO SET CAPACITY AND GRADUATION

(For Single interval, it means Max x e; for Dual Interval, it means Max_2 x e_2)

a. Press **M+** when display shows **CAP2** and utilize **M+** to increase value, **MR** to move cursor to the next digit
b. The graduation is limited to maximum of 1/6000 when type **NTEP** is selected. It must be set to validate the change
c. Press **MODE** to save and continue setup

TO SET DUAL INTERVAL (Max_1 x e_1)

When type **NORMAL** is set, display will now show **CAP1?** to allow setup for dual interval.

a. Press **M+** when display shows **CAP1?** and utilize **M+** to increase value, **MR** to move cursor to the next digit. The default value is 50% of the capacity set in **CAP2**.
b. The graduation also must be set to validate the change
c. Press **MODE** to save and complete the setup

NOTE 1: You must reset capacity every time when you change the type between NTEP and NORMAL.

NOTE 2: When **NTEP** type is selected, indicator will automatically limit users to program the configuration under 1/6000. When **NORMAL** type is selected, indicator will automatically allow users to program the configuration under 1/30000.

NOTE 3: When setting up capacities, users must program all digits including division before pressing **MODE** to complete set up.

2.4.5 Auto Power Off Setting (F4)

This unit is equipped with **AUTO POWER OFF** function. Default setting = auto off after 4 minutes of idle time. Follow the steps below to disable/enable the **AUTO POWER OFF** function.

a. Refer to the **2.4.1** on how to enter **F4**
b. Press **MODE** to shift between **0_OFF** and **4_OFF**

-To disable the **AUTO POWER OFF** function select "**0-OFF**"
-To employ the **AUTO POWER OFF** function select "**4-OFF**"

c. Press **TARE** to save and return to other function

2.4.6 RS-232 Transmission Setting (F5)

a. Refer to the **2.4.1** on how to enter **F5**
b. Press **M+** to select baud rate of **4800**, **9600** and **19200**
c. Press **MODE** to enter transmission protocol selection and press **M+** to select **P=n81** or **P=E71**
d. Press **TARE** to save and return to other function

Note: The default value is:

Baud Rate :9600
DATA BIT :8
PARITY BIT :N(NONE)
STOP BIT :1
CODE :ASCII

2.4.7 AVERAGE FUNCTION (F6)

a. Refer to the **2.4.1** on how to enter **F6**
b. Press **MODE** to select **FiLt.0** or **FiLt.1**
-To disable the **AVERAGE FUNCTION** select "**FiLt.0**"
-To employ the **AVERAGE FUNCTION** select "**FiLt.1**"
c. Press **TARE** to save and return to other function

2.4.8 Data Output Setting (F7)

a. Refer to the **2.4.1** on how to enter **F7**
b. Press **MODE** to select data output format of **SEr.1** or **SEr.2**
-When selects **SEr.1**, scale will transmit data continuously via RS-232 when reading is stable
-When selects **SEr.2**, data will transmit single data via RS-232 when pressing **M+**
c. Press **TARE** to save and return to other function

2.4.9 DATA PRINTOUT FORMAT (F8)

a. Refer to the **2.4.1** on how to enter **F8**
b. Press **MODE** to select data output format of **Prnt.1** or **Prnt.2**
-When **Prnt.1** is selected, scale will print data in a table format with number of entries and total weight
-When **Prnt.2** is selected, scale will print single data when pressing **M+**
c. Press **TARE** to save and return to other functions

2.4.10 Auto Tare Function Setting (F9)

a. Refer to the **2.4.1** on how to enter **F9**
b. Press **MODE** to select **Troff** or **Tr_on**
   -**Troff** will disable the auto tare off function
   -**Tr_on** will enable the auto tare function and tare off the first weight that is placed on the scale
c. Press **TARE** to save and return to other functions

2.4.11 High Resolution Verification Mode (F19)

This function is intended to be used only by the manufacturer for initial verification purpose.

2.4.12 Gravity Compensation Device – C.G. (F20)

This function stores the gravity value of where the scale is manufactured. Scale was calibrated according to the value stored.

a. Refer to the **2.4.1** on how to enter **F20**
b. Use **MODE** to shift to next digit and use **ON/ZERO** to increase the value
c. Press and hold **MODE** to save or **TARE** to quit
   -When the change is saved, scale will enter calibration automatically to reflect the change in gravity. Please refer to **2.4.14** for how to calibrate the scale

2.4.13 Gravity Compensation Device – U.G. (F21)

This function stores the gravity value of where the scale will be used. The value stored in F.21 will be used to compare with the value in F.20 to compensate the difference in gravity value.

a. Refer to the **2.4.1** on how to enter **F21**
b. Use **MODE** to shift to next digit and use **ON/ZERO** to increase the value
c. Press and hold **MODE** to save and return to other functions

2.4.14 CALIBRATION METHODS

DEALER CALIBRATION

a. Turn indicator off
b. Press and hold **TARE**, then press **ON/OFF**
c. Indicator displays **F1**
d. Press **MODE** to enter dealer calibration
e. Press and hold **MODE** for **YES** and indicator will self calibrate zero point before proceeding to the first point calibration
f. Load the mass according to the display, normally the first point is 1/3 of the full capacity
g. Press **MODE** when display is flashing
h. Indicator displays **CAL._2**
i. Press **MODE** for **YES** or **ZERO** to exit
j. Load the mass according to the display, normally the second point is the 2/3 capacity
k. Press **MODE** when display is flashing to complete the calibration procedure

AUTO CALIBRATION

a. Turn indicator off
b. Press and hold **MODE**, then press **ON/OFF**
c. Indicator displays **CAL._1**
d. Press **MODE** for **YES** and indicator will self calibrate zero point before proceeding to the first point calibration
e. Load the mass according to the display, normally the first point is 1/3 of the full capacity
f. Press **MODE** when display is flashing
g. Indicator displays **CAL._2**
h. Press **MODE** for **YES** or **ZERO** to exit
i. Load the mass according to the display, normally the second point is the 2/3 capacity
j. Press **MODE** when display is flashing to complete the calibration procedure

Note：*Auto calibration can only be performed when the span value Is within +/-10% tolerance of dealer calibration.*

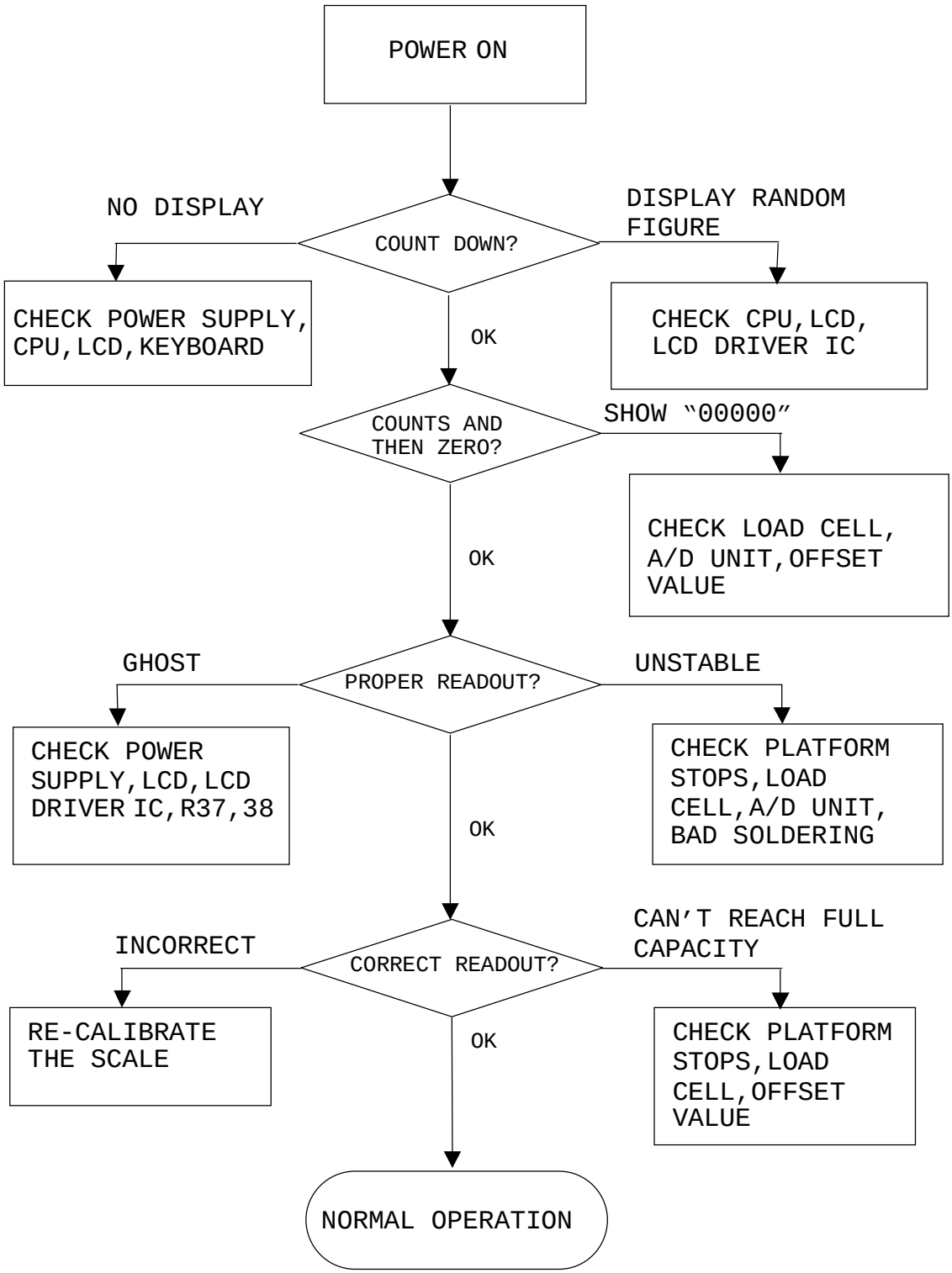
NOTE: CALIBRATION IN LB

When calibrating the scale in lb, please refer to the following steps:

a. Enable the metric/imperial weighing unit conversion in F3
b. Press **MODE** to change the weighing unit to lb when scale is on
c. Repeat the procedures in **Auto Calibration**

3. TROUBLE SHOOTING

3.1 TROUBLE SHOOTING LOOP

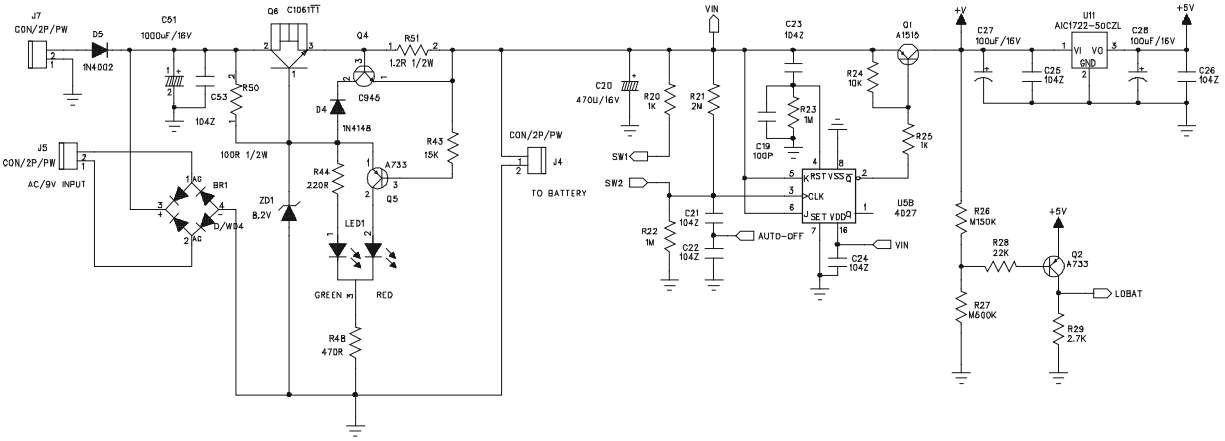


3.2 PARTS AND COMPONENTS TROUBLE SHOOTING

3.2.1 Power Supply Checks

3.2.1.1 Relevant parts:

Main Board (FM-12-X)
Q1 (A1515)
Q2 (A733)
U5 (IC 4027)
U11(AIC 1722-5.0)
Q5 (C1061)
Q4 (C945)
ZD1(ZENER 8.2V)
R51(1.2R 1/2W)
DC JACK
BATTERY(6V 4Ah)



Description:

1) Power source: Rechargeable Battery 6V/4Ah or AC adaptor(9V, 500mA)

2) +5V power drives digital circuit system.
   U11 (AIC 1722-5.0) is a 5volts Voltage Regulator.

3) +5V power drives analog circuit system.
   U4 (AS2950A) is a 5 volts Voltage Regulator.

4) Auto-off:
   If the indicator is set to 4_oFF of power-saving function or under LO-BAT situation, after a fixed time interval (normally 4 minutes), the CPU will release a low to high pulse signal to toggle U5, then Q1 cuts off, indicator will be shut down immediately.

5) Low Power Detection:
The Q2(A733) is designed to detect the power level. When battery power is less than 5.5V, the collector pole will become low potential, then CPU will instruct LCD display to show LO-BAT symbol.

3.2.1.2 Input voltage: 5.5V or higher

Check and recharge battery if voltage is less than 5.5V.

3.2.1.3 System voltage (Vcc): 5V +/- 10%

Check that the system voltage is within 5V +/- 10%
a) less than 4.5V, the CPU may not work properly.
b) more than 6V, ghosting will appear on LCD.

3.2.2 Platform Overload Stop

Make sure that the platform does not interfere with anything when weighing. Check that the platform does not touch the upper (no load) and/or lower (full load) overload stops.

3.2.3 LCD Display Checking

3.2.3.1 Check that it is soldered and connected properly between LCD and driver IC (PCF8576), driver IC (PCF8576) and CPU.

3.2.3.2 Check whether LCD is broken.

3.2.4 CPU Checking

3.2.4.1 Check that all pins are seated properly into the socket.

3.2.4.2 Check that the Crystal Oscillator works.

3.2.4.3 Check the RESET is normally low.

3.2.5 A/D Unit Checking

3.2.5.1 Check that the A/D unit is correctly fed with +5VDC power.

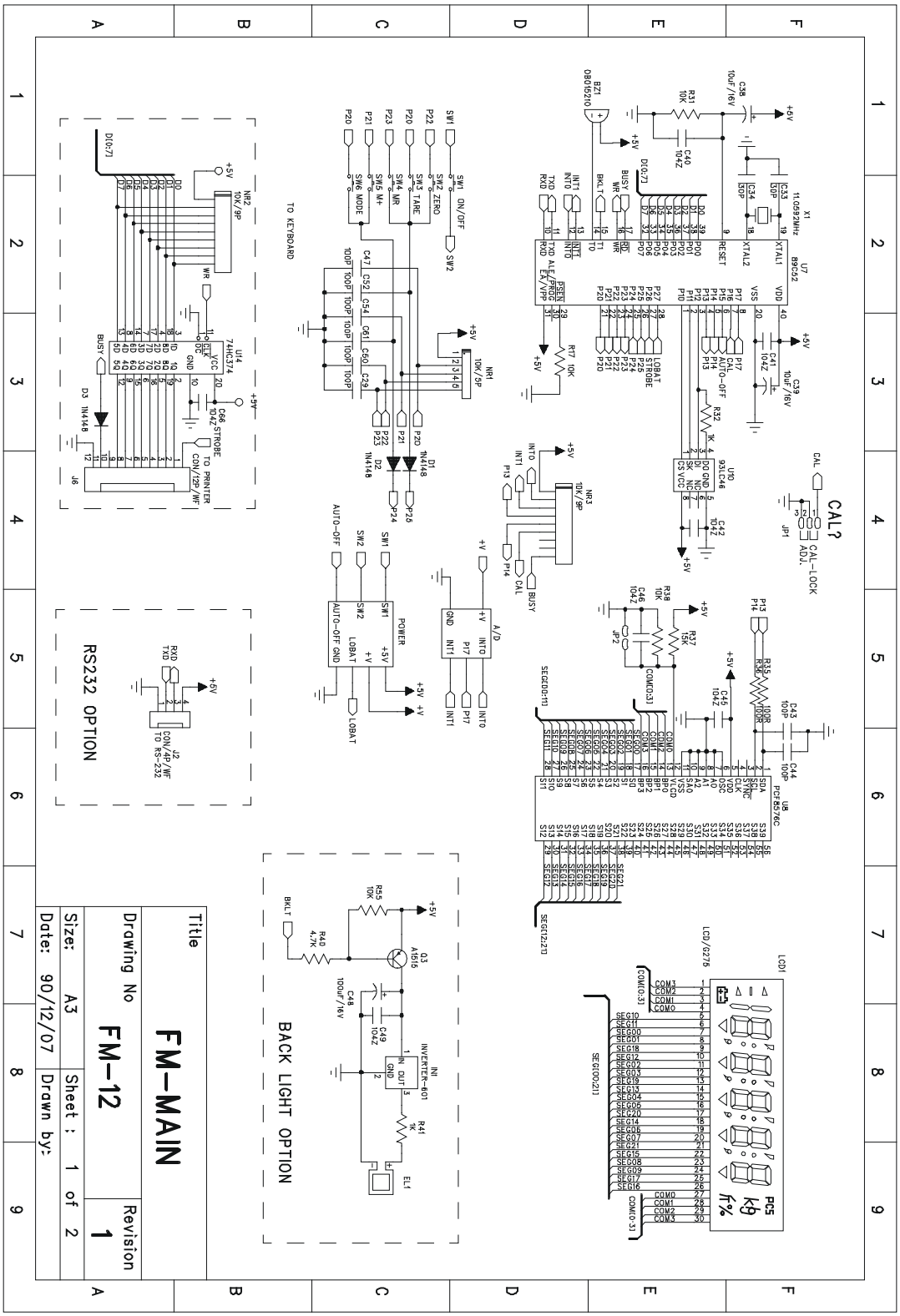
3.2.5.2 Check that the signal output of loadcell is normal.

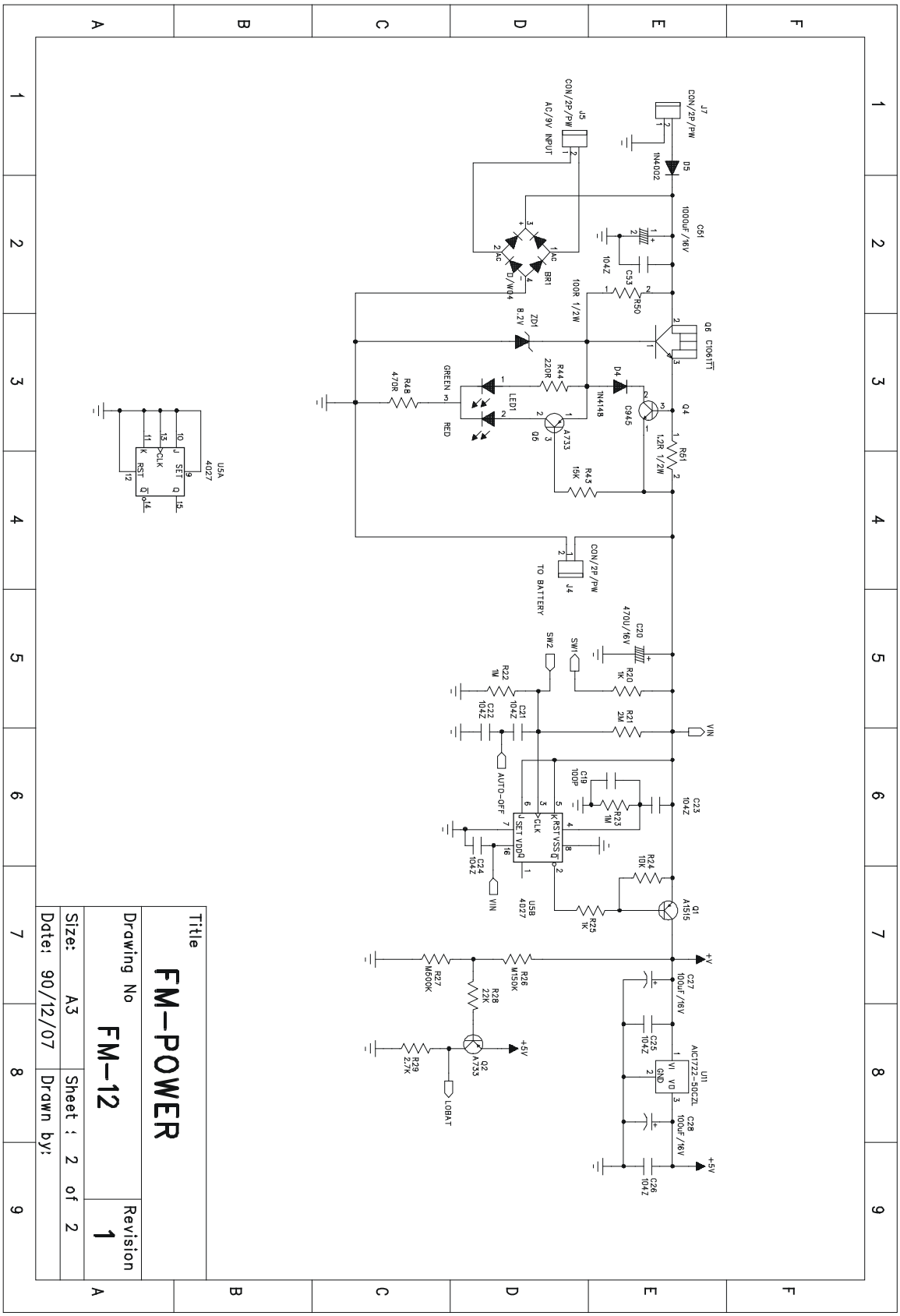
3.2.5.3 Check OP. Amplifiers & A/D Converter (AD7705).

When no error is found with the above checking procedures, the trouble can be caused by the loadcell or the PCB itself. Replace with a new one will help to identify the defective part.
Following the replacement of any parts, it is important that the scale be recalibrated again.

4. ELECTRICAL CIRCUITRY

4.1 SCHEMATICS

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FM-POWER
Drawing No
FM-12
Revision
1
Size: A3
Sheet : 2 of 2
Date: 90/12/07
Drawn by:
J7 CON/2P/PW
J5 CON/2P/PW AC/9V INPUT
D5 1N4002
C61 1000uF/16V
C53 104Z
R50 100R 1/2W
BR1 D/W04
ZD1 8.2V
Q6 C1061TT
R44 220R
D4 1N4148
LED1 GREEN RED
R48 470R
Q5 A733
Q4 C945
R61 1.2R 1/2W
R43 15K
J4 CON/2P/PW TO BATTERY
C20 470U/16V
SW1
SW2
R20 1K
R22 1M
C21 104Z
C22 104Z
R21 2M
VIN
AUTO-OFF
C19 100P
R23 1M
C23 104Z
U5B 4027
C24 104Z
R24 10K
R25 1K
Q1 A1015
+V
R27 M600K
R26 M150K
R28 22K
Q2 A733
R29 2.7K
+5V
LOBAT
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C25 104Z
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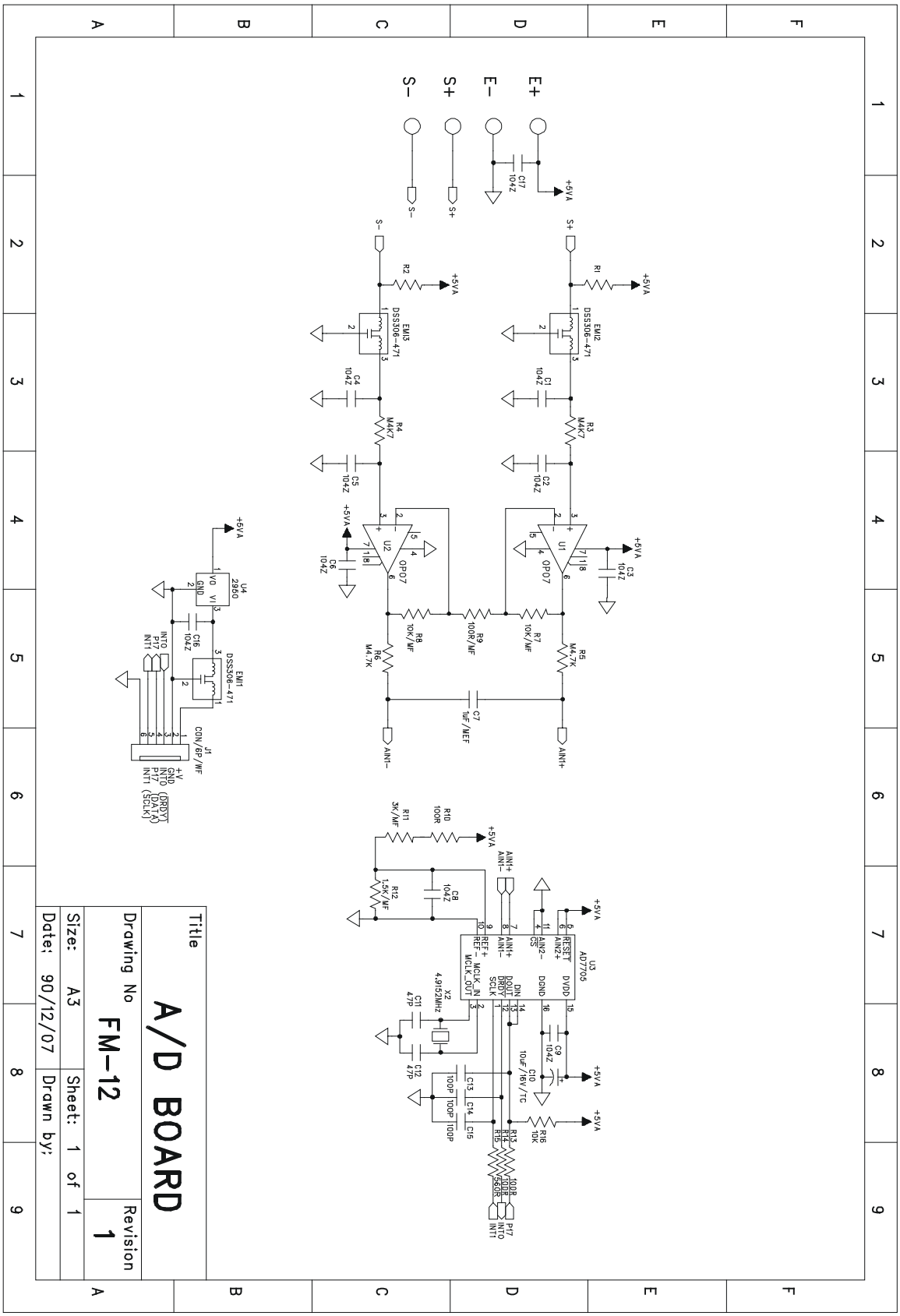
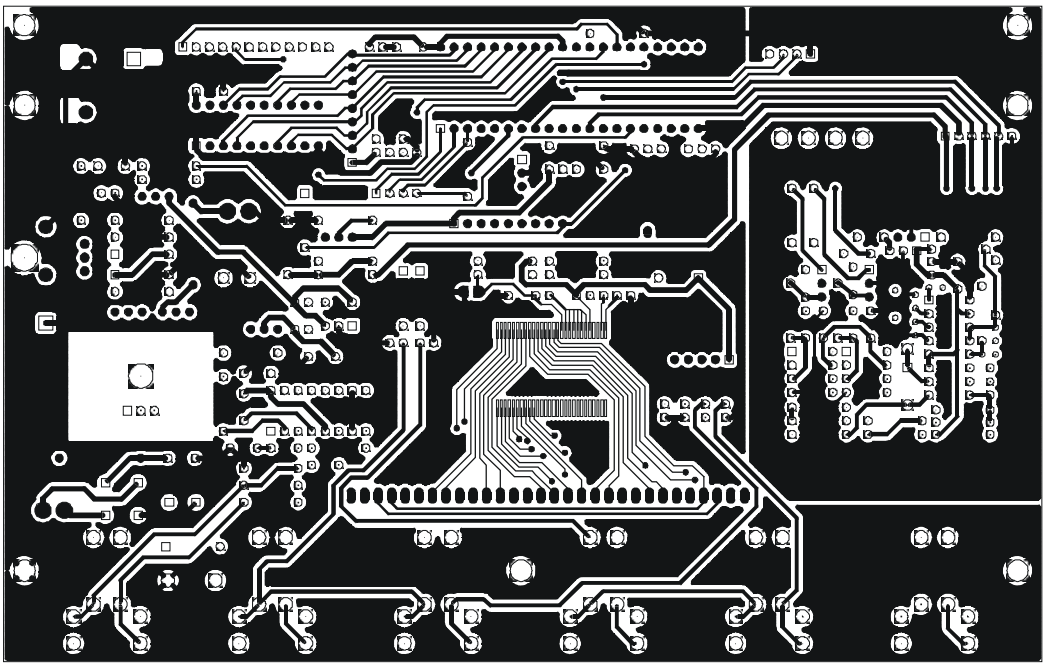
C28 100uF/16V
C26 104Z
U5A 4027


E+
E−
S+
S−
+5VA
AIN1+
AIN1−
A/D BOARD
FM-12
Drawing No
Revision
1
Size: A3
Sheet: 1 of 1
Date: 90/12/07
Drawn by:

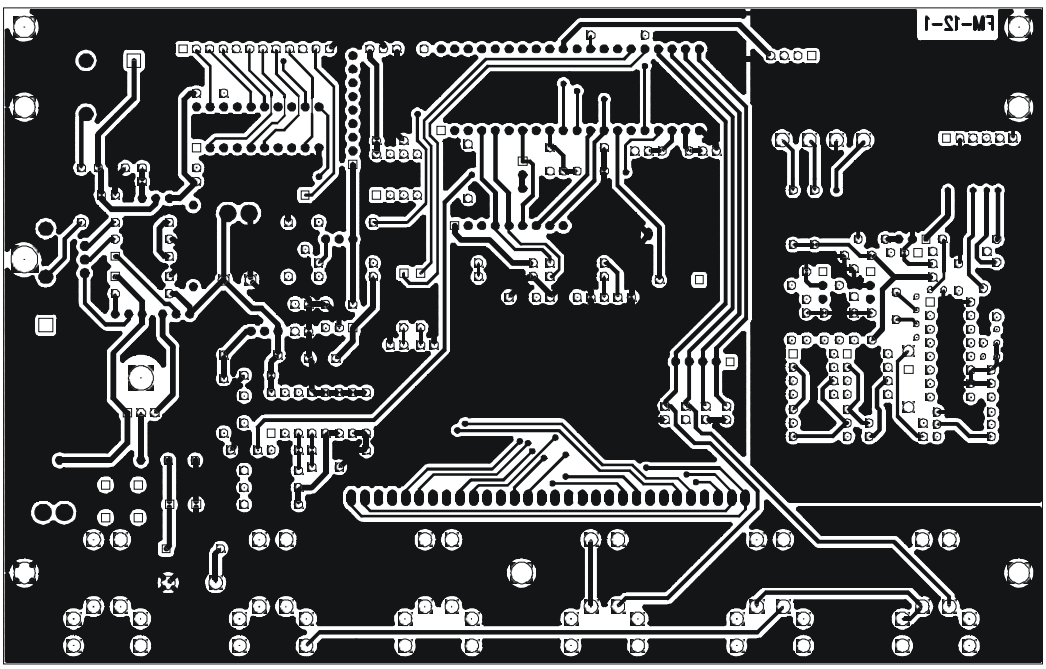
4.2 PCB LAYOUT

COMPONENT SIDE (1)

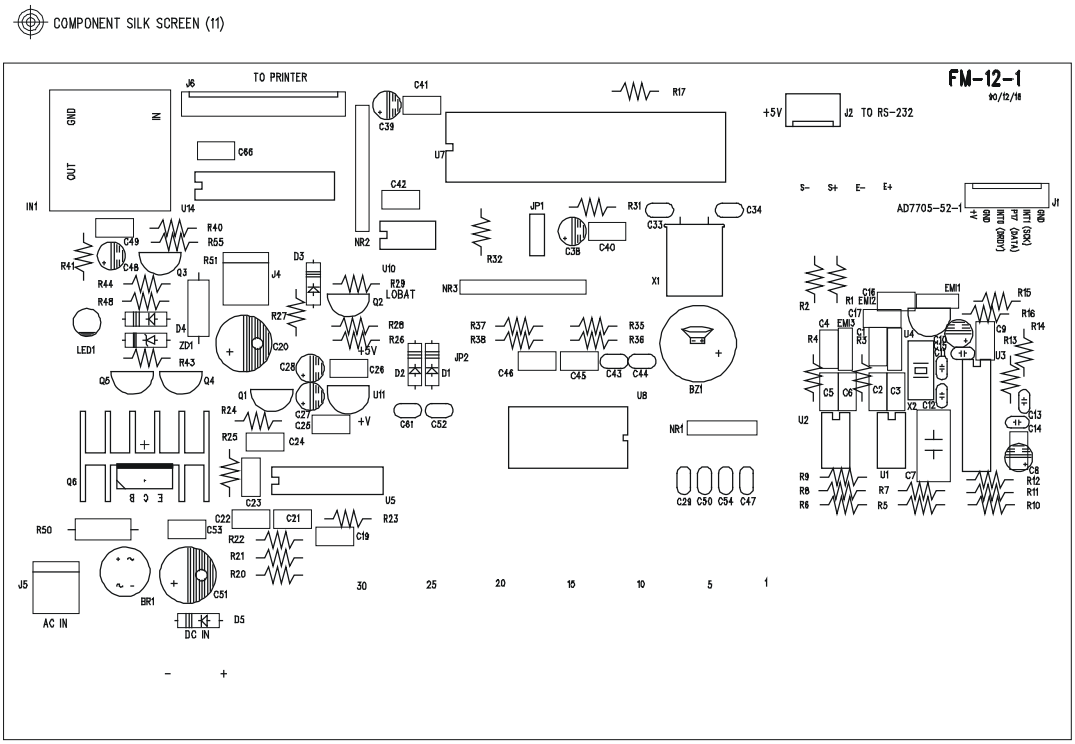


FM-12-1 TOP LAYER

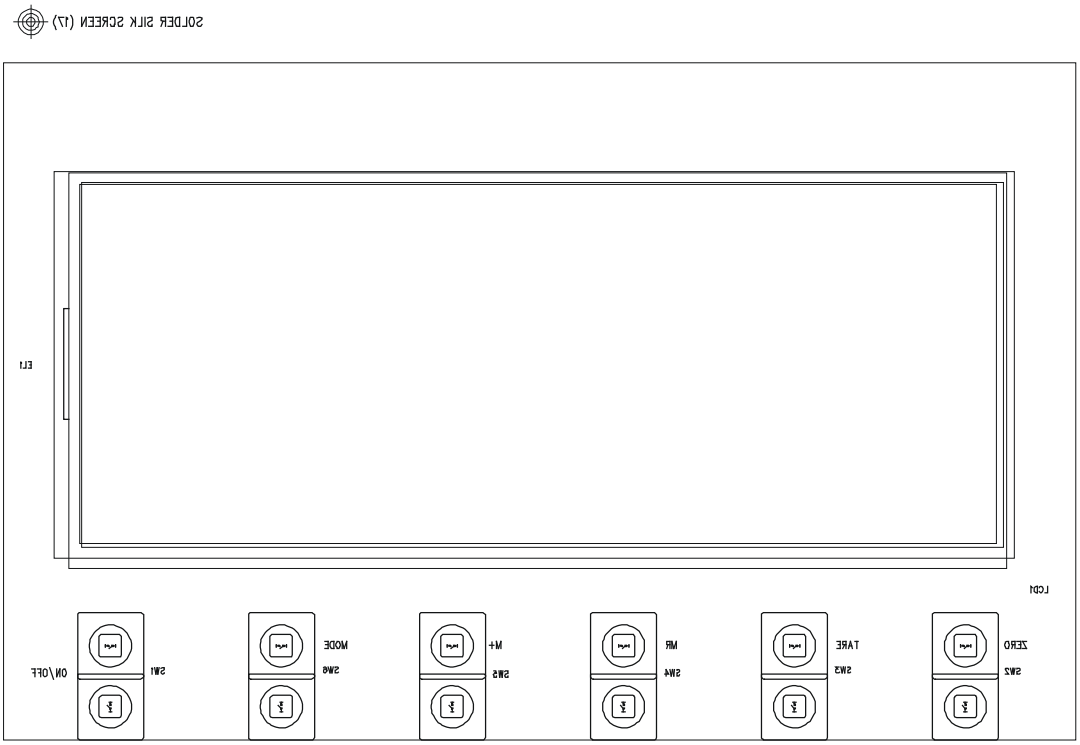
SOLDER SIDE (2)



FM-12-1 BOTTOM LAYER



FM-12-1 TOP OVERLAY



FM-12-1 BOTTOM OVERLAY

5. BILL OF MATERIAL

STRUCTURE

Parts No.	Description	Specification	Qty	Remark
UFM-B SERIES				
A1007000006	FERRITE CORE	T-22.5*13.8*19.2mm	1	
A1007000004	FERRITE CORE	T-28.3*13.8*13.5mm	1	
A1204040370	WIRE ARRAY	4 PIN 37cm	1	
C1W10000000	PANEL PC	200*78*2mm(TRANSPARENT)	1	
G0001NBS000	PLASTIC HOUSING(UNDER)	NBS SERIES	1	INDICATOR
G0001FM0200	PLASTIC HOUSING(UPPER)	FM SERIES (WHITE)	1	INDICATOR
C1AFM030000	OVERLAY PC	AFM SERIES	1	
E1FM0000012	P.C.B. KIT	FM-12-X MAINBOARD	1	
A1600060300	RECHARGEABLE BATTERY	6V 3Ah	1	
A1208020351	BATTERY WIRE ARRAY	2PIN 35cm,SINGLE HOUSING	1	
A1208020601	BATTERY WIRE ARRAY	2PIN 60cm,SINGLE HOUSING	1	
F0013NBS000	BATTERY CLAMP	NBS SERIES, 78*10+φ3.5*2	1	
A6000120950	ADAPTOR(US TYPE)	120V/9V,500mA(UL APPROVED)	1	
G0001NBS100	PILLAR SWIVEL	NBS SERIES	1	
G0001NBS101	SWIVEL TENON	NBS SERIES	1	
A0906000220	DC JACK	SCD-022(BLACK)	1	
A1207050471	CABLE	5PIN + PLT-165-AD, 47CM	1	
A0045040350	LOAD CELL	042-50KG	1	UFM-B-30
A0045040410	LOAD CELL	042-100KG	1	UFM-B-60
A0045040420	LOAD CELL	042-200KG	1	UFM-B-150
A0905600501	CONNECTOR	PLT-165-P	1	
F0002BS0000	S/S PLATTER	BS SERIES, 460*335*17	1	
F0100NBS000	ALUMINUM PLATFORM BASE	NBS SERIES	1	
G0004NBS000	ADJUSTABLE FEET	NBS∮54*41+5/16-24UNF	4	
F0007NBS000	PILLAR SUPPORT	NBS SERIES	1	
F0007NBS101	S/S COVER PLATE	NBS SERIES	1	FOR PILLAR SUPPORT
F0004NBS001	PILLAR	NBS ∮38*58cm*1.2mm	1	
Z0043000002	T TYPE SEALING RING	M-1605-RLE	2	
A5005000091	BUBBLE LEVEL	D14	1	
G0030000200	BUBBLE LEVEL HOLDER	∮20*12	1	
Y0005000000	SEALING PARTS		1	FOR INDICATOR
Y0005000002	SEALING PARTS		1	FOR PLATFORM

UFM-F SERIES

A0905600500	CONNECTOR	5 PIN(PLT-165-R)	1	
A1007000001	FERRITE CORE	TR-16*9*28mm	2	
A1007000004	FERRITE CORE	T-28.3*13.8*13.5mm	1	
A1204040370	WIRE ARRAY	4 PIN 37cm	1	
C1W10000000	PANEL PC	200*78*2mm(TRANSPARENT)	1	
F0005FW0100	ALUMINUM HOUSING (UNDER)	FW SERIES	1	INDICATOR
G0001FM0200	PLASTIC HOUSING(UPPER)	FM SERIES (WHITE)	1	INDICATOR
C1AFM030000	OVERLAY PC	AFM SERIES	1	
E1FM0000012	P.C.B. KIT	FM-12-X MAINBOARD	1	
A1600060400	RECHARGEABLE BATTERY	6V 4Ah	1	
A1208020351	BATTERY WIRE ARRAY	2PIN 35cm,SINGLE HOUSING	1	
A1208020601	BATTERY WIRE ARRAY	2PIN 60cm,SINGLE HOUSING	1	
F0013FW0001	BATTERY CLAMP	FW SERIES, 121*8*0.5t	1	
A6000120950	ADAPTOR(US TYPE)	120V/9V,500mA(UL APPROVED)	1	
A0906000210	DC JACK	SCD-021(BLACK)	1	
A0004600410	LOAD CELL	263-100KG	1	UFM-F-60
A0004600415	LOAD CELL	263-150KG	1	UFM-F-120
A0004600450	LOAD CELL	263-500KG	1	UFM-F-300
A0905600501	CONNECTOR	PLT-165-P	1	
F0002FW0000	S/S PLATTER	FW SERIES, 400*500	1	
F0100FW0001	ALUMINUM PLATFORM BASE	FW SERIES	1	
G0004FW0000	ADJUSTABLE FEET	FW SERIES	4	
F0007FW0002	PILLAR SUPPORT	FW SERIES	1	
F0007FW0200	STEEL PLATE	FW SERIES	1	FOR PILLAR SUPPORT
F0004FW0000	PILLAR	FW SERIES, 70cm	1	
Z0043000002	T TYPE SEALING RING	M-1605-RLE	2	
A5005000091	BUBBLE LEVEL	D14	1	
G0030000200	BUBBLE LEVEL HOLDER	§20*12	1	
Y0005000000	SEALING PARTS		1	FOR INDICATOR
Y0005000002	SEALING PARTS		1	FOR PLATFORM

UFM-L SERIES

A0905600500	CONNECTOR	5 PIN(PLT-165-R)	1	
A1007000001	FERRITE CORE	TR-16*9*28mm	2	
A1007000004	FERRITE CORE	T-28.3*13.8*13.5mm	1	
A1204040370	WIRE ARRAY	4 PIN 37cm	1	

C1W10000000	PANEL PC	200*78*2mm(TRANSPARENT)	1	
F0005FW0100	ALUMINUM HOUSING (UNDER)	FW SERIES	1	INDICATOR
G0001FM0200	PLASTIC HOUSING(UPPER)	FM SERIES (WHITE)	1	INDICATOR
C1AFM030000	OVERLAY PC	AFM SERIES	1	
E1FM0000012	P.C.B. KIT	FM-12-X MAINBOARD	1	
A1600060400	RECHARGEABLE BATTERY	6V 4Ah	1	
A1208020351	BATTERY WIRE ARRAY	2PIN 35cm,SINGLE HOUSING	1	
A1208020601	BATTERY WIRE ARRAY	2PIN 60cm,SINGLE HOUSING	1	
F0013FW0001	BATTERY CLAMP	FW SERIES, 121*8*0.5t	1	
A6000120950	ADAPTOR(US TYPE)	120V/9V,500mA(UL APPROVED)	1	
A0906000210	DC JACK	SCD-021(BLACK)	1	
A0004600410	LOAD CELL	263-100KG	1	UFM-L-60
A0004600415	LOAD CELL	263-150KG	1	UFM-L-120
A0004600450	LOAD CELL	263-500KG	1	UFM-L-300
A0004600475	LOAD CELL	263-750KG	1	UFM-L-600
A0905600501	CONNECTOR	PLT-165-P	1	
F0002FW0010	S/S PLATTER	FW SERIES, 500*600*1.2t	1	
F0100FW0015	ALUMINUM UPPER PLATFORM BASE	PF4 SERIES, 610*510*62	1	
F0100FW0016	ALUMINUM UNDER PLATFORM BASE	PF4 SERIES, 581*483*57	1	
G0004FW0000	ADJUSTABLE FEET	FW SERIES	4	
F0007FW0002	PILLAR SUPPORT	FW SERIES	1	
F0007FW0200	STEEL PLATE	FW SERIES	1	FOR PILLAR SUPPORT
F0004FW0000	PILLAR	FW SERIES, 70cm	1	
Z0043000002	T TYPE SEALING RING	M-1605-RLE	2	
A5005000091	BUBBLE LEVEL	D14	1	
G0030000200	BUBBLE LEVEL HOLDER	ϕ20*12	1	
Y0005000000	SEALING PARTS		1	FOR INDICATOR
Y0005000002	SEALING PARTS		1	FOR PLATFORM

FM-12-X MAINBOARD

E0FM0000012	P.C.B.	FM-12-X	1	
A0102000275	L.C.D.	UTN-G275JV-2W	1	LCD1
A0201089582	I.C.	SM8958A	1	U7
A0202093461	I.C.	93C46	1	U10
A0205040270	I.C.	4027	1	U5
A0207017225	VOLTAGE REGULATOR I.C.	AIC1722-50CZT	1	U11
A0208085760	I.C.	PCF8576CT	1	U8

A0300000040	I.C. SOCKET	40 PIN	1	U7
A0401007330	TRANSISTOR	A733	2	Q2,5
A0401009450	TRANSISTOR	2SC945	1	Q4
A0401010610	TRANSISTOR	H1061C OR D880	1	Q6
A0401015150	TRANSISTOR	A1515	2	Q1,3
A0501004002	DIODE	1N4002	1	D5
A0501004148	DIODE	1N4148	4	D1-4
A0502000001	BRIDGE RECTIFIER	W06(1A)	1	BR1
A0503020082	ZENER DIODE	1/2W 8V2(9A3)	1	ZD1
A0625050000	L.E.D.	GREEN/RED,ROUND 5mm	1	LED1
A0701106017	CAPACITOR (EC)	10uF/25V(SS TYPE)	4	C27,28,38,39
A0701107016	CAPACITOR (EC)	100uF/16V	1	C49
A0701108016	CAPACITOR (EC)	1000uF/16V	1	C51
A0701477016	CAPACITOR (EC)	470uF/16V	1	C20
A0730104050	CAPACITOR (MLC)	104Z	15	C19,21-26,40-42, 45-46,49,53,66
A0740030050	CERAMIC CAPACITOR (CC)	30pf/50V(30)	2	C33-34
A0740101050	CERAMIC CAPACITOR (CC)	100pf/50V(101)	8	C29,43-44,47, 50,52,54,61
A0804041503	METAL FILM RESISTOR	150KΩ 1/4W	1	R26
A0804045003	METAL FILM RESISTOR	500KΩ 1/4W	1	R27
A0805020120	CARBON FILM RESISTOR	1.2Ω 1/2W	1	R51
A0805021101	CARBON FILM RESISTOR	100Ω 1/2W	1	R50
A0805041101	CARBON FILM RESISTOR	100Ω 1/4W	2	R35,36
A0805041102	CARBON FILM RESISTOR	1KΩ 1/4W	4	R20,25,32,41
A0805041103	CARBON FILM RESISTOR	10KΩ 1/4W	5	R17,24,31,38,55
A0805041105	CARBON FILM RESISTOR	1MΩ 1/4W	2	R22-23
A0805041153	CARBON FILM RESISTOR	15KΩ 1/4W	2	R37,43
A0805041205	CARBON FILM RESISTOR	2MΩ 1/4W	1	R21
A0805041223	CARBON FILM RESISTOR	22KΩ 1/4W	1	R28
A0805041272	CARBON FILM RESISTOR	2.7KΩ 1/4W	1	R29
A0805041471	CARBON FILM RESISTOR	470Ω 1/4W	1	R48
A0805041472	CARBON FILM RESISTOR	4.7KΩ 1/4W	1	R40
A0802010305	RESISTOR NETWORK	10KΩ 5 PIN	1	NR1
A0802010309	RESISTOR NETWORK	10KΩ 9 PIN	2	NR2-3
A0902010020	CONNECTOR	2 PIN WAFER,PITCH=3.9mm	3	
A0907010030	CONNECTOR	1 * 3 PIN 180°	1	JP1
A0910111020	MINI JUMPER	PITCH 2.54	1	JP1

A1100211059	CRYSTAL	11.0592MHZ	1	X1
A1500000004	BUZZER	OBO-15210	1	BZ1
A1306000003	TACT SW.	KPT-1104B	6	SW1-6
A5004000004	HEAT SINK	MB-217-22+PIN	1	Q1

A/D SECTION

A0203077050	I.C.	AD7705AN	1	U3
A0206000072	I.C	OP177	2	U1-2
A0207029500	VOLTAGE REGULATOR I.C.	AS2950AW	1	U4
A0702226016	CAPACITOR (TC)	22uF/16V(226)	1	C10
A0713105063	POLYESTER FILM CAPACITOR(MEF)	1uF/63V (105)	1	C7
A0730104050	CAPACITOR (MLC)	104Z	10	C1-6,C8-9,C16-17
A0740047050	CERAMIC CAPACITOR (CC)	47pf/50V(47)	2	C11-12
A0740101050	CERAMIC CAPACITOR (CC)	100pf/50V(101)	3	C13-15
A0803041002	METAL FILM RESISTOR	10KΩ 1/4W	2	R7-8
A0803041501	METAL FILM RESISTOR	1.5KΩ 1/4W	1	R12
A0803043001	METAL FILM RESISTOR	3KΩ 1/4W	1	R11
A0803041500	METAL FILM RESISTOR	150Ω 1/4W	1	R9 (SPAN)
A0804044701	METAL FILM RESISTOR	4.7KΩ 1/4W	4	R3-6
A0805041101	CARBON FILM RESISTOR	100Ω 1/4W	3	R10,R13-14
A0805041103	CARBON FILM RESISTOR	10KΩ 1/4W	1	R16
A0805041561	CARBON FILM RESISTOR	560Ω 1/4W	1	R15
A1008000001	EMI FILTER	DSS-306-55Y5S471M100	3	EMI1-3
A1100249152	CRYSTAL	4.9152MHZ	1	X2
F0015000012	PROTECTION BOX	7705-52-1 (UPPER)	1	
F0015000013	PROTECTION BOX	7705-52-1 (UNDER)	1	
Z0010000305	SCREW	M3*6	2	

BACK LIGHT OPTION

A1400000005	BACK LIGHT(EL)	168.0*68.0mm	1	EL
A1401005120	BACK LIGHT INVERTER	5V TO 120V	1	IN1

PRINTER OPTION

A0204743742	I.C.	74HC374	1	U14
A0901010120	CONNECTOR	12 PIN WAFER	1	J6
A1250251220	WIRE ARRAY	D-SUB 25PIN+12PIN	1	
A1007000011	FERRITE CORE	19*6.5*32(CLAMP TYPE)	1	

RS232 OPTION

A0901010040	CONNECTOR	4 PIN WAFER	1	J2
E1HBW100000	P.C.B. KIT	HBW SERIES, RS232C-1B1	1	

5. APPENDIX

SyncMOS Technologies Inc. **SM8958**

May 2001

8 - Bit Micro-controller

with 32KB flash & 1KB RAM embedded

Product List

SM8958L25, 25 MHz 32KB internal memory MCU
SM8958C25, 25 MHz 32KB internal memory MCU
SM8958C40, 40 MHz 32KB internal memory MCU

Description

The SM8958 series product is an 8 - bit single chip micro controller with 32KB flash & 1KB RAM embedded. It is a derivative of the 8052 micro controller family. With its hardware features and powerful instruction set, it's straight forward to make it a versatile and cost effective controller for those applications which demand up to 32 I/O pins for PDIP package or up to 36 I/O pins for PLCC/QFP package, or applications which need up to 32KB memory either for program or for data or mixed.
To program the on-chip flash memory, a commercial writer is available to do it in parallel programming method.

Ordering Information

yywwv
SM8958ihhk

yy: year, ww:week
v: version identifier {, A, B,...}
i: process identifier {L=3.0V ~ 3.6V, C=4.5V ~ 5.5V}
hh: working clock in MHz {25, 40}
k: package type postfix {as below table}

Postfix	Package	Pin/Pad Configuration	Dimension
P	40L PDIP	page 2	page15
J	44L PLCC	page 2	page16
Q	44L QFP	page 2	page17

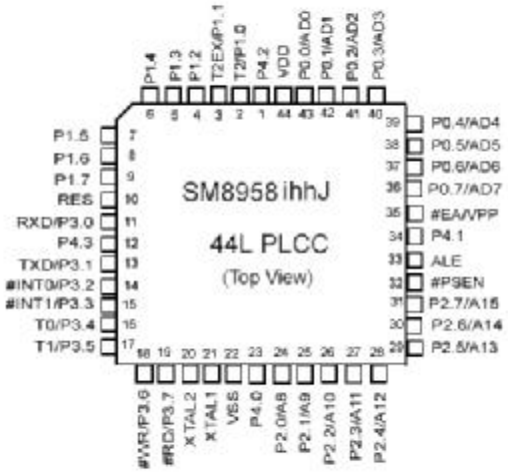
Features

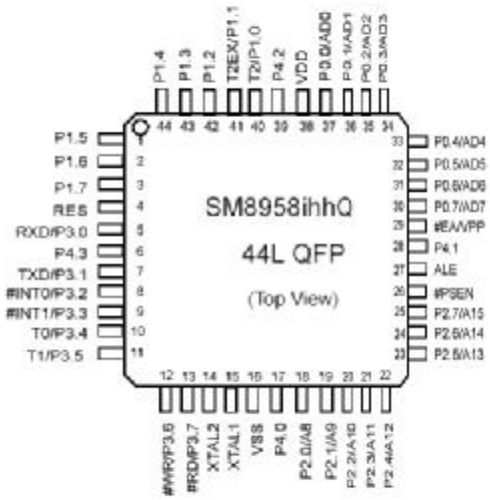
- Working voltage: 3.0V ~ 3.6V For L Version
  4.5V ~ 5.5V For C Version
- General 8052 family compatible
- 12 clocks per machine cycle
- 32 KB internal flash memory
- 1024 bytes data RAM
- 3 16 bit timers/counters
- Four 8-bit I/O ports for PDIP package
- Four 8-bit I/O ports + one 4-bit I/O ports for PLCC or QFP package
- Full duplex serial channel
- Bit operation instruction
- Page free jumps
- 8-bit unsigned division
- 8-bit unsigned multiply
- BCD arithmetic operations
- Direct addressing
- Indirect addressing
- Nested interrupts
- Two priority level interrupts
- A serial I/O port
- Power save modes:
  Idle mode and power down mode
- Code protection function
- One watch dog timer (WDT)
- Low EMI (inhibit ALE)

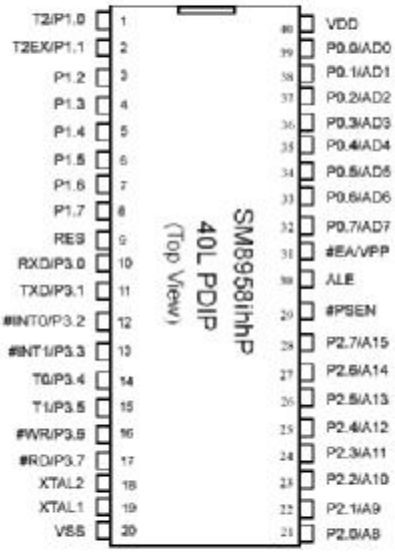
Taiwan
4F, No. 1 Creation Road 1,
Science-based Industrial Park,
Hsinchu, Taiwan 30077

TEL: 886-3-579-2926
886-3-579-2988
FAX: 886-3-579-2960
886-3-578-0403

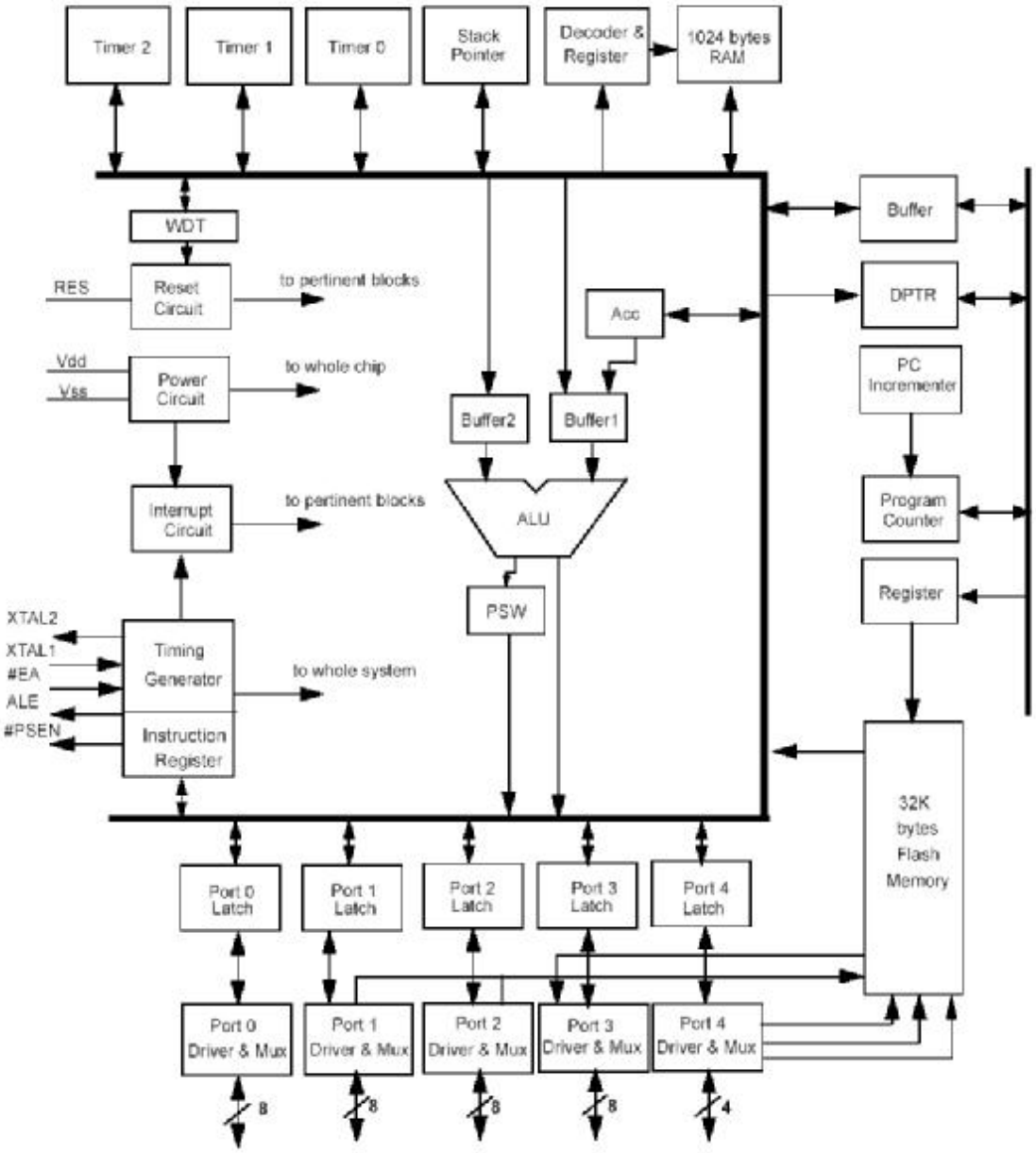
Pin Configurations







Block Diagram



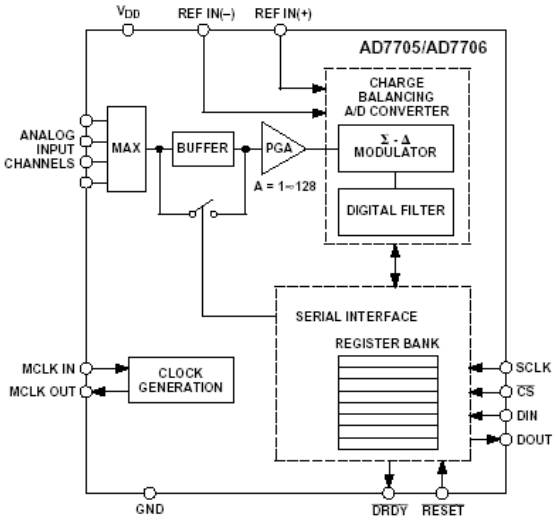
3 V/5 V, 1 mW 2-/3-Channel 16-Bit, Sigma-Delta ADCs

AD7705/AD7706*

FEATURES

AD7705: Two Fully Differential Input Channel ADCs
AD7706: Three Pseudo Differential Input Channel ADCs
16 Bits No Missing Codes
0.003% Nonlinearity
Programmable Gain Front End
Gains from 1 to 128
Three-Wire Serial Interface
SPI™, QSPI™, MICROWIRE™ and DSP Compatible
Schmitt Trigger Input on SCLK
Ability to Buffer the Analog Input
2.7 V to 3.3 V or 4.75 V to 5.25 V Operation
Power Dissipation 1 mW max @ 3 V
Standby Current 8 μA max
16-Lead DIP, 16-Lead SOIC and TSSOP Packages

FUNCTIONAL BLOCK DIAGRAM



GENERAL DESCRIPTION

The AD7705/AD7706 are complete analog front ends for low frequency measurement applications. These two-/three-channel devices can accept low level input signals directly from a transducer and produce a serial digital output. They employ a sigma-delta conversion technique to realize up to 16 bits of no missing codes performance. The selected input signal is applied to a proprietary programmable gain front end based around an analog modulator. The modulator output is processed by an on-chip digital filter. The first notch of this digital filter can be programmed via an on-chip control register allowing adjustment of the filter cutoff and output update rate.

The AD7705/AD7706 operate from a single 2.7 V to 3.3 V or 4.75 V to 5.25 V supply. The AD7705 features two fully differential analog input channels while the AD7706 features three pseudo differential input channels. Both devices feature a differential reference input. Input signal ranges of 0 mV to +20 mV through 0 V to +2.5 V can be incorporated on both devices when operating with a V_{DD} of 5 V and a reference of 2.5 V. They can also handle bipolar input signal ranges of ±20 mV through ±2.5 V, which are referenced to the AIN(–) inputs on the AD7705 and to the COMMON input on the AD7706. The AD7705/AD7706, with 3 V supply and a 1.225 V reference, can handle unipolar input signal ranges of 0 mV to +10 mV through 0 V to +1.225 V. Its bipolar input signal ranges are ±10 mV through ±1.225 V. The AD7705/AD7706 thus perform all signal conditioning and conversion for a two- or three-channel system.

The AD7705/AD7706 are ideal for use in smart, microcontroller or DSP-based systems. They feature a serial interface that can be configured for three-wire operation. Gain settings, signal polarity and update rate selection can be configured in software using the input serial port. The part contains self-calibration and system calibration options to eliminate gain and offset errors on the part itself or in the system.

CMOS construction ensures very low power dissipation, and the power-down mode reduces the standby power consumption to 20 μW typ. These parts are available in a 16-lead, 0.3 inch-wide, plastic dual-in-line package (DIP), a 16-lead wide body (0.3 inch) small outline (SOIC) package and also a low profile 16-lead TSSOP.

PRODUCT HIGHLIGHTS

1. The AD7705/AD7706 consumes less than 1 mW at 3 V supplies and 1 MHz master clock, making it ideal for use in low power systems. Standby current is less than 8 μA.
2. The programmable gain input allows the AD7705/AD7706 to accept input signals directly from a strain gage or transducer, removing a considerable amount of signal conditioning.
3. The AD7705/AD7706 is ideal for microcontroller or DSP processor applications with a three-wire serial interface reducing the number of interconnect lines and reducing the number of opto-couplers required in isolated systems.
4. The part features excellent static performance specifications with 16 bits, no missing codes, ±0.003% accuracy and low rms noise (<600 nV). Endpoint errors and the effects of temperature drift are eliminated by on-chip calibration options, which remove zero-scale and full-scale errors.

*Protected by U.S. Patent Number 5,134,401.
SPI and QSPI are trademarks of Motorola, Inc.
MICROWIRE is a trademark of National Semiconductor.

REV. A

One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.
Tel: 781/329-4700 World Wide Web Site: http://www.analog.com
Fax: 781/326-8703

1 FEATURES

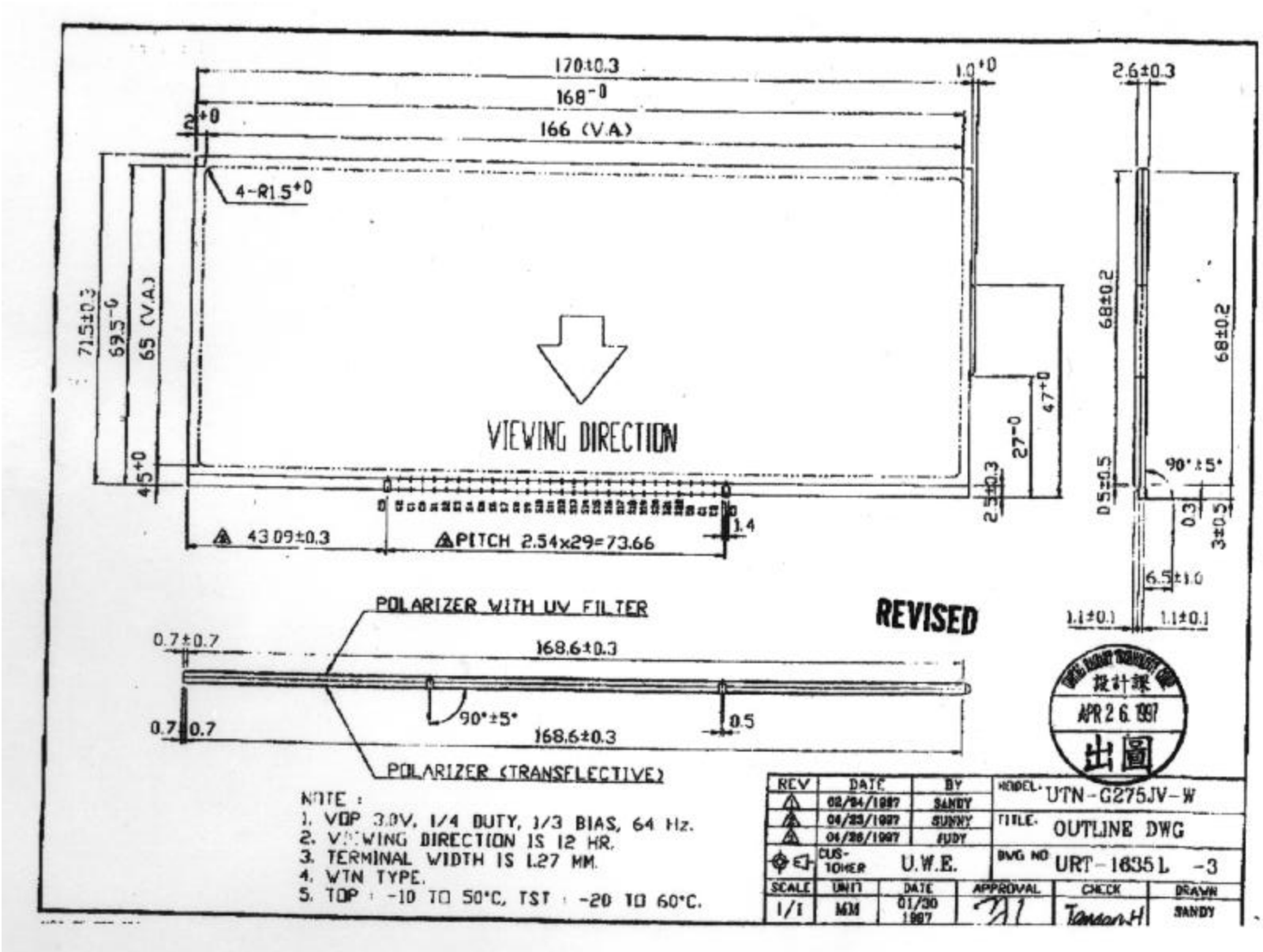
- Single-chip LCD controller/driver
- Selectable backplane drive configuration: static or 2/3/4 backplane multiplexing
- Selectable display bias configuration: static, ½ or ⅓
- Internal LCD bias generation with voltage-follower buffers
- 40 segment drives: up to twenty 8-segment numeric characters; up to ten 15-segment alphanumeric characters; or any graphics of up to 160 elements
- 40 × 4-bit RAM for display data storage
- Auto-incremented display data loading across device subaddress boundaries
- Display memory bank switching in static and duplex drive modes
- Versatile blinking modes
- LCD and logic supplies may be separated
- Wide power supply range: from 2 V for low-threshold LCDs and up to 9 V for guest-host LCDs and high-threshold (automobile) twisted nematic LCDs
- Low power consumption
- Power-saving mode for extremely low power consumption in battery-operated and telephone applications
- I²C-bus interface
- TTL/CMOS compatible
- Compatible with any 4-bit, 8-bit or 16-bit microprocessors/microcontrollers
- May be cascaded for large LCD applications (up to 2560 segments possible)
- Cascadable with 24-segment LCD driver PCF8566
- Optimized pinning for plane wiring in both single and multiple PCF8576 applications
- Space-saving 56-lead plastic very small outline package (VSO56)
- Very low external component count (at most one resistor, even in multiple device applications)
- Compatible with chip-on-glass technology
- Manufactured in silicon gate CMOS process.

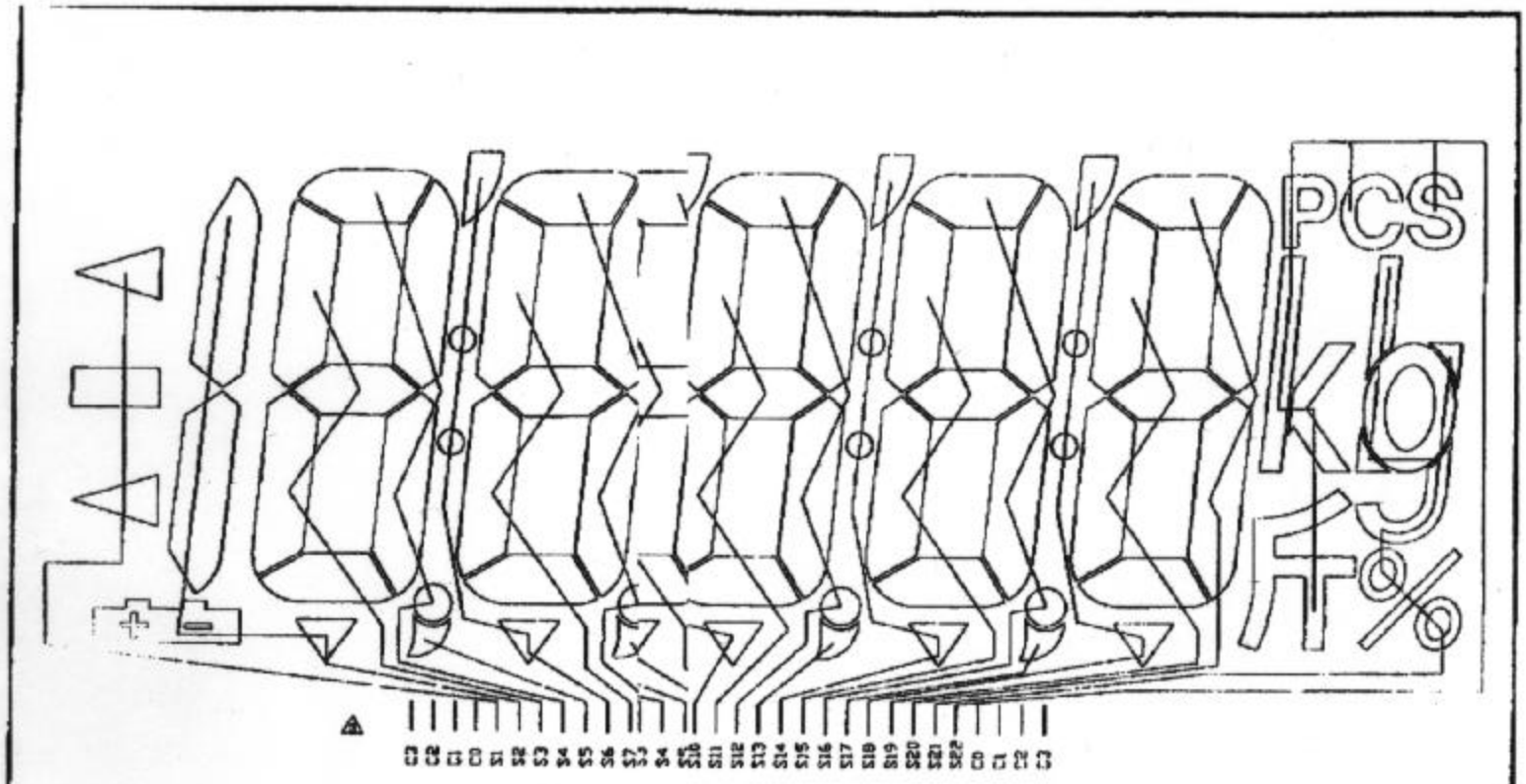
2 GENERAL DESCRIPTION

The PCF8576 is a peripheral device which interfaces to almost any Liquid Crystal Display (LCD) with low multiplex rates. It generates the drive signals for any static or multiplexed LCD containing up to four backplanes and up to 40 segments and can easily be cascaded for larger LCD applications. The PCF8576 is compatible with most microprocessors/microcontrollers and communicates via a two-line bidirectional I²C-bus. Communication overheads are minimized by a display RAM with auto-incremented addressing, by hardware subaddressing and by display memory switching (static and duplex drive modes).

3 ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PCF8576T	VSO56	plastic very small outline package; 56 leads	SOT190-1
PCF8576U	–	chip in tray	–
PCF8576U/2	–	chip with bumps in tray	–
PCF8576U/5	–	unsawn wafer	–
PCF8576U/10	FFC	chip on film frame carrier (FFC)	–
PCF8576U/12	FFC	chip with bumps on film frame carrier (FFC)	–


170±0.3
168 -0
166 (V.A)
1.0 +0
2 +0
4-R1.5 +0
71.5±0.3
69.5 -0
65 (V.A)
45 +0
VIEWING DIRECTION
2.5±0.3
27 -0
47 +0
2.6±0.3
68±0.2
68±0.2
0.5±0.5
90°±5°
0.3
3±0.5
6.5±1.0
1.1±0.1
1.1±0.1
1.4
43.09±0.3
PITCH 2.54x29=73.66
POLARIZER WITH UV FILTER
REVISED
0.7±0.7
168.6±0.3
90°±5°
0.5
0.7
0.7
168.6±0.3
POLARIZER (TRANSFLECTIVE)
NOTE :
1. VOP 3.0V, 1/4 DUTY, 1/3 BIAS, 64 Hz.
2. VIEWING DIRECTION IS 12 HR.
3. TERMINAL WIDTH IS 1.27 MM.
4. WTN TYPE.
5. TOP : -10 TO 50°C, TST : -20 TO 60°C.
設計課
APR 26 1997
出圖
REV
DATE
BY
02/24/1997
SANDY
04/23/1997
SUNNY
04/28/1997
JUDY
CUSTOMER
U.W.E.
MODEL: UTN-G275JV-W
TITLE: OUTLINE DWG
DWG NO URT-1635L -3
SCALE
1/1
UNIT
MM
DATE
01/30
1997
APPROVAL
CHECK
DRAWN
SANDY



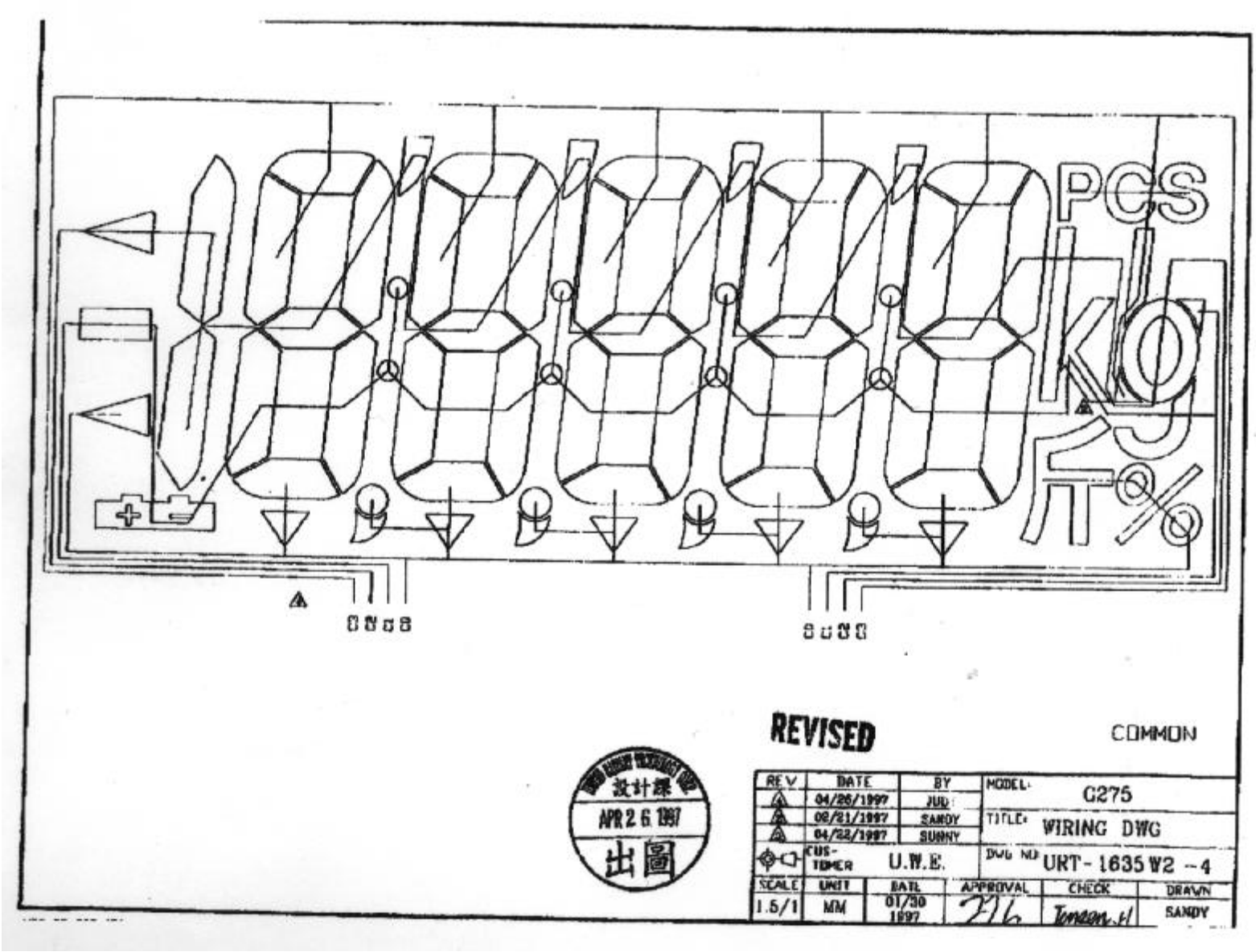
REVISED

SEGM .1

設計課
APR 2 6 1997
出圖

	04/18/1997	SANDY	MODEL	G275
	04/22/1997	SUNNY	TITLE	WIRING DWG
	04/25/1997	JUDY		
	CUSTOMER	U.W.E.	DWG NO	URT-1635W1-3

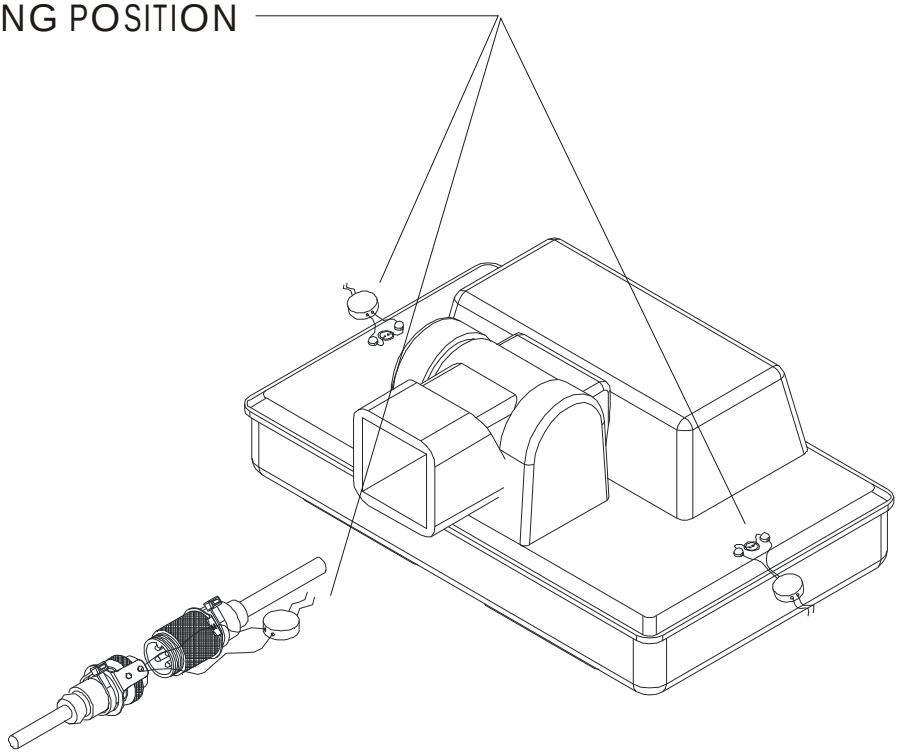
SCALE	UNIT	DATE	APPROVAL	CHECK	DRAWN
1.5/1	MM	01/30 1997		Jason.H	SANDY


PCS
KG
REVISED
COMMON
設計課
APR 2 6 1997
出圖
REV
DATE
BY
04/25/1997
JUD
09/21/1997
SANDY
04/22/1997
SUNNY
CUSTOMER
U.W.E.
MODEL
C275
TITLE
WIRING DWG
DWG NO
URT-1635 W2 -4
SCALE
1.5/1
UNIT
MM
DATE
01/30 1997
APPROVAL
CHECK
DRAWN
SANDY

APPROVED NO.		REV.
DRAWING NO.: UFM-M-01-A		1
DWG. NAME	UFM-B SERIES SEALING DIAGRAM	

UFM-B SERIES SEALING DIAGRAM

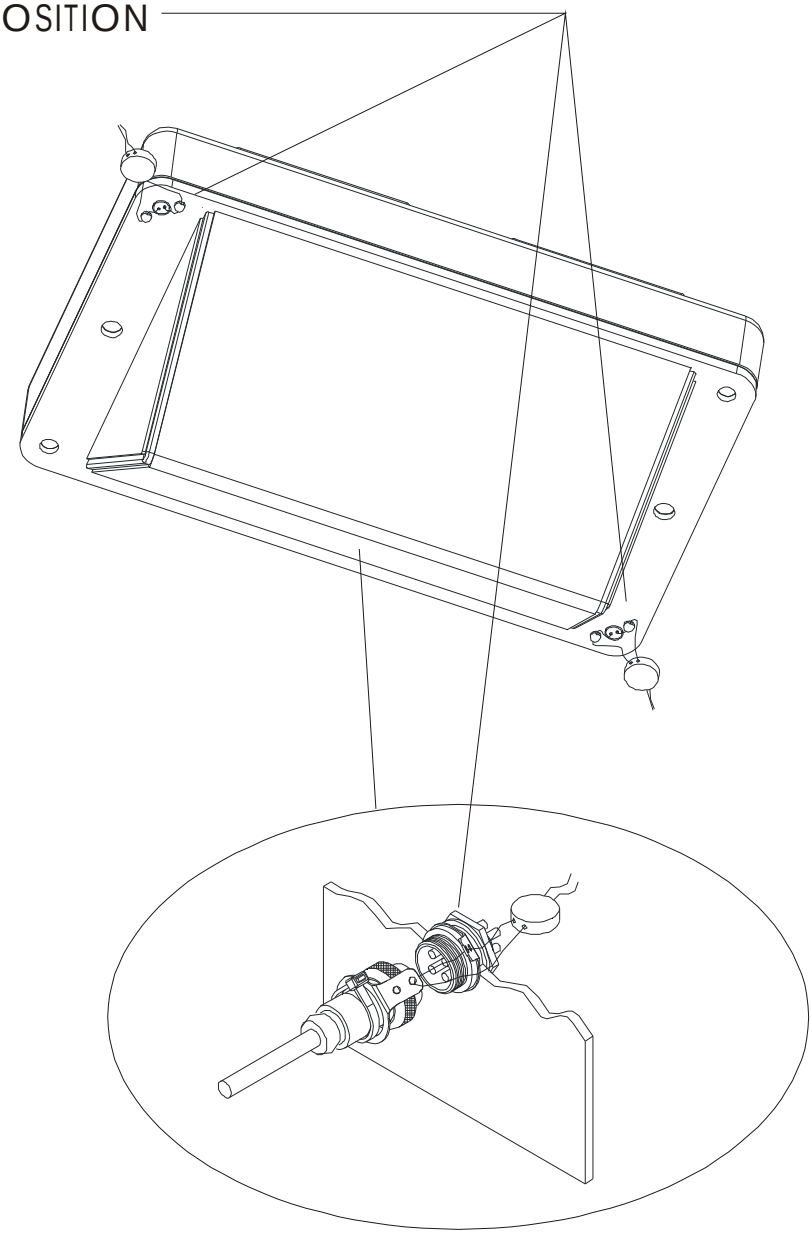
SEALING POSITION



APPROVED NO.		REV.
DRAWING NO.: UFM-M-02-A		1
DWG. NAME	UFM-F/L SERIES SEALING DIAGRAM	

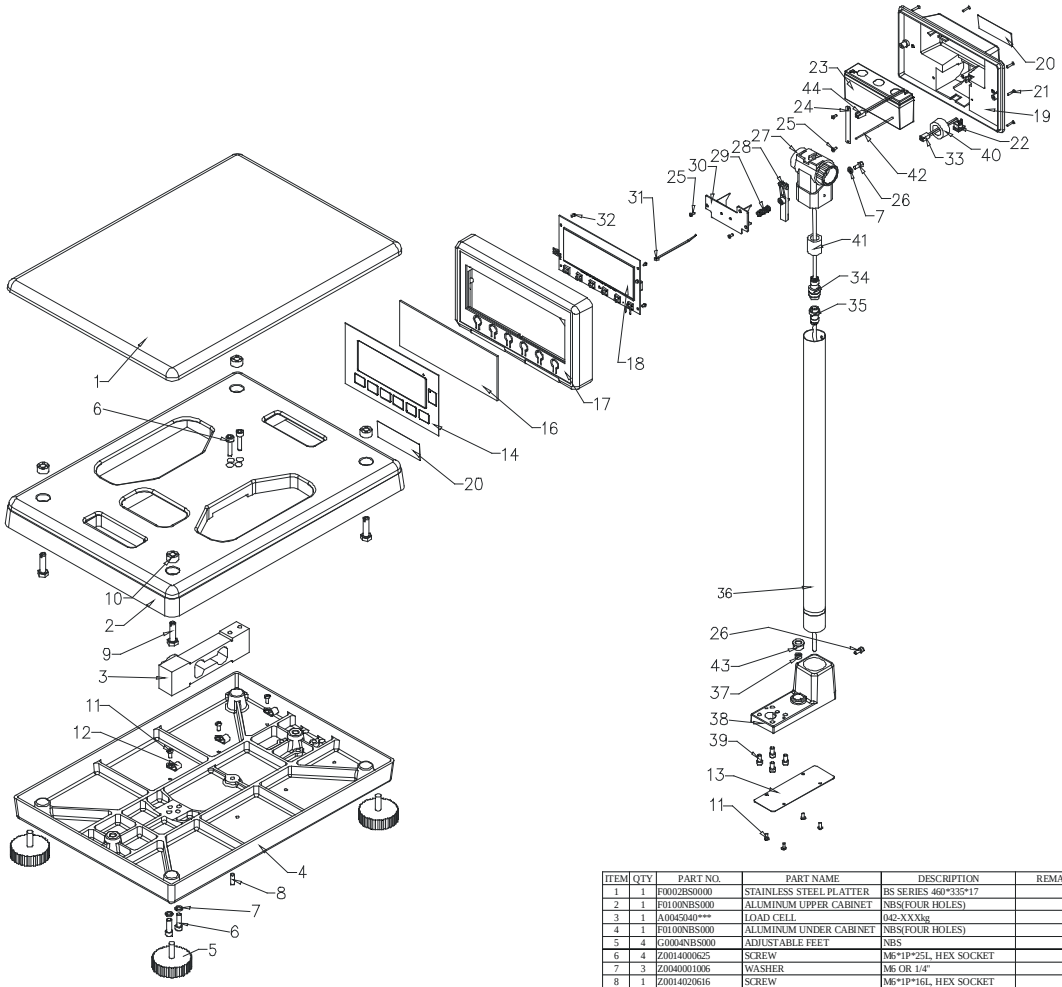
UFM-F/L SERIES SEALING DIAGRAM

SEALING POSITION



UFM-B SERIES EXPLOSION DIAGRAM

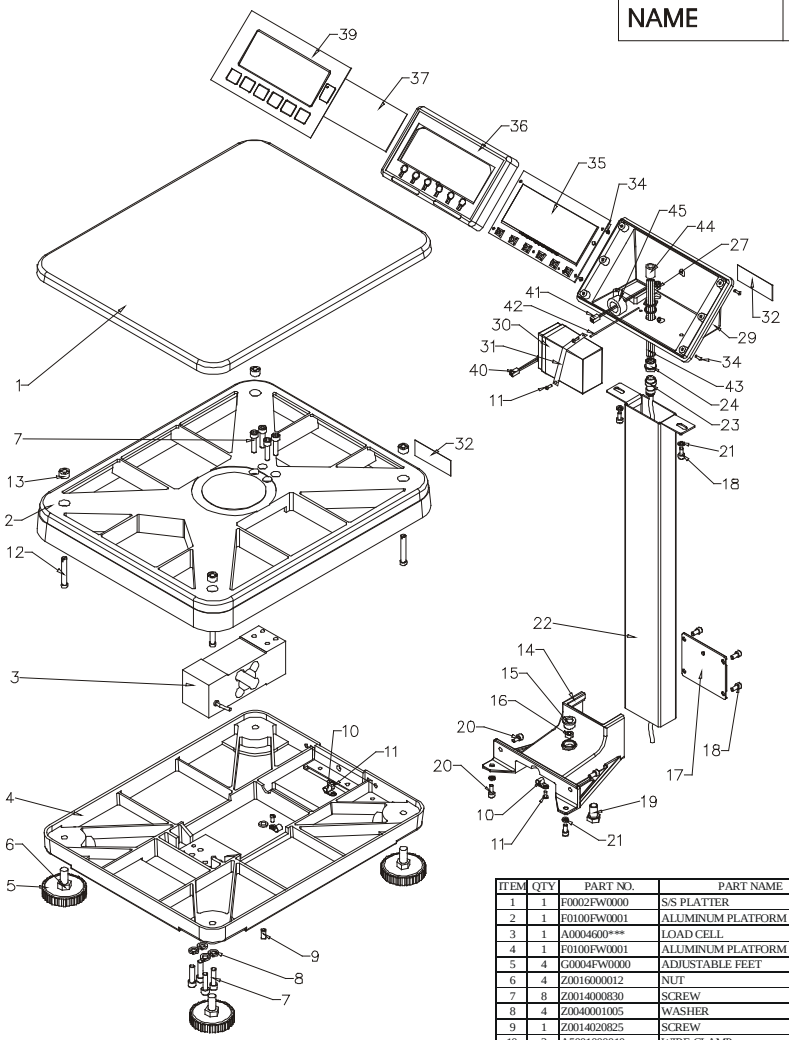
APPROVED NO.	REV.
DRAWING NO.: UFM-E-01-A	1
DWG. NAME	UFM-BSERIES EXPLOSION DIAGRAM



ITEM	QTY	PART NO.	PART NAME	DESCRIPTION	REMARK
1	1	F0002BS0000	STAINLESS STEEL PLATTER	BS SERIES 460*335*17	
2	1	F0100NBS000	ALUMINUM UPPER CABINET	NBS(FOUR HOLES)	
3	1	A0045040***	LOAD CELL	042-XXXkg	
4	1	F0100NBS000	ALUMINUM UNDER CABINET	NBS(FOUR HOLES)	
5	4	G0004NBS000	ADJUSTABLE FEET	NBS	
6	4	Z0014000625	SCREW	M6*1P*25L, HEX SOCKET	
7	3	Z0040001006	WASHER	M6 OR 1/4"	
8	1	Z0014020616	SCREW	M6*1P*16L, HEX SOCKET	
9	4	Z0013010830	SCREW	M8*1.25P*30L, HEX HEAD	
10	4	F0010BS0090	COPPER NUT	M8*1.25P*9H	
11	7	Z0010000410	SCREW	M4*0.7P*10L, ROUND HEAD	
12	3	A5001000005	WIRE CLAMP	UC-0.5	
13	1	F0007NBS101	S/S PLATE	NBS	
14	1	C1AFM030000	OVERLAY PC	AFM SERIES	
16	1	C1W10000000	PANEL PC	200*78*2mm(TRANSPARENT)	
17	1	G0001FM0200	PLASTIC HOUSING(UPPER)	FM SERIES	
18	1	E1FM0000012	P.C.B. (FM-12-X)	MAIN BOARD	
19	1	G0001NBS020	PLASTIC HOUSING(UNDER)	NBS SERIES	
20	1	Z1UFM******	NAME PLATE	UFM SERIES	
21	2	Z0011000412	SCREW	M4*0.7P*12L, FLAT HEAD	
22	1	A0906000220	D.C. JACK	SCD-022 (BLACK)	
23	1	A1600060300	RECHARGEABLE BATTERY	GP3-6 6V 3AH	
24	1	F0007NBS102	BATTERY CLAMP	NBS SERIES	
25	4	Z0010001310	SCREW	TAPPED, 3*10L	
26	2	Z0010000512	SCREW	M5*0.8P*12L, PC	
27	1	G0001NBS100	SWIVEL	NBS SERIES	
28	1	G0001NBS101	SWIVEL ADJUSTING LEVER	NBS SERIES	
29	1	Z0041100725	SPRING	100725	
30	1	F0007NBS200	SWIVEL FIX PLATE	NBS	
31	1	A5001000301	CABLE TIE	CV-120S	
32	5	Z0010001305	SCREW	TAPPED, 3*5L	
33	1	A1208020601	BATTERY WIRE	2PIN 60cm, SINGLE HOUSING	
34	1	A1207050471	CABLE	5PIN + PLT-165-AD, 47CM	
35	1	A0905600501	CONNECTOR	PLT-165-P	
36	1	F0004NBS002	S/S PILLAR	NBS, Dia. 38*58cm*2mm	
37	1	A5005000090	BUBBLE LEVEL	D14 (Dia. 14mm)	
38	1	F0007NBS000	PILLAR SUPPORT	NBS	
39	4	Z0014000612	SCREW	M6*1P*12L, HEX HEAD	
40	1	A1007000004	FERRITE CORE	T-28.3*13.8*13.5mm	
41	1	A1007000006	FERRITE CORE	T-22.5*13.8*19.2mm	
42	1	A1204011300	CONDUCTIVE WIRE	30 cm (BLACK)	
43	1	G0030000200	BUBBLE LEVEL HOLDER		
44	1	A1208020351	BATTERY WIRE	2PIN 35cm, SINGLE HOUSING	

UFM-F/L SERIES EXPLOSION DIAGRAM

APPROVED NO.	REV.
DRAWING NO.: UFM-E-02-A	1
DWG. NAME	UFM-F/L SERIES EXPLOSION DIAGRAM



ITEM	QTY.	PART NO.	PART NAME	DESCRIPTION	REMARK
1	1	F0002FW0000	S/S PLATTER	FW SERIES, 400*500	
2	1	F0100FW0001	ALUMINUM PLATFORM SET	FW SERIES	UPPER
3	1	A0004600***	LOAD CELL	263-XXXkg	
4	1	F0100FW0001	ALUMINUM PLATFORM SET	FW SERIES	UNDER
5	4	G0004FW0000	ADJUSTABLE FEET	FW SERIES	
6	4	Z0016000012	NUT	M12*1.75P	
7	8	Z0014000830	SCREW	M8*1.25P*30L	
8	4	Z0040001005	WASHER	M8 OR 5/16"	
9	1	Z0014020825	SCREW	M8*1.25P*25L(NI)	
10	3	A5001000010	WIRE CLAMP	UC6.85	
11	5	Z0015000406	SCREW	M4*0.7P*6L	
12	4	Z0010000850	SCREW	M8*1.25P*50L	
13	4	F0010BS0090	COPPER NUT	M8*1.25P*9H	
14	1	F0007FW0002	PILLAR SUPPORT	FW SERIES	
15	1	G0030000200	BUBBLE LEVEL HOLDER	ϕ 20*12	
16	1	A5005000091	BUBBLE LEVEL	D14	
17	1	F0007FW0200	STEEL PLATE	FW SERIES	
18	6	Z0014000612	SCREW	M6*1P*12L	
19	1	Z0013001220	SCREW	M12*1.75P*20L	
20	4	Z0014000620	SCREW	M6*1P*20L	
21	4	Z0040001006	WASHER	M6 OR 1/4"	
22	1	F0004FW0000	PILLAR	FW SERIES, 70cm	
23	1	A0905600501	CONNECTOR	PLT-165-P	
24	1	A0905600500	CONNECTOR	PLT-165-R	
27	1	A0906000210	D.C. JACK	SCD-021 (BLACK)	
29	1	F0005FW0100	ALUMINUM HOUSING (UNDER)	FW SERIES	
30	1	A1600060400	RECHARGEABLE BATTERY	6V 4AH	
31	1	F0013FW0001	BATTERY CLAMP	FW SERIES, 121*8*0.5t	
32	1	Z1UFM******	NAME PLATE	UFM SERIES	
34	9	Z0010001310	SCREW	TAPPED	
35	1	E1FM0000012	P.C.B.	FM-12-X	
36	1	G0001FM0200	PLASTIC HOUSING (UPPER	FM SERIES (WHITE)	
37	1	C1W10000000	PANEL PC	200*78*2mm(TRANSPARENT)	
39	1	C1AFM030000	OVERLAY PC	AFM	
40	1	A1208020351	BATTERY WIRE ARRAY	2PIN 35cm, SINGLE HOUSING	
41	1	A1208020601	BATTERY WIRE ARRAY	2PIN 60cm, SINGLE HOUSING	
42	2	A1204011300	CONDUCTIVE WIRE	30 cm (BLACK)	
43	1	A1204040370	WIRE ARRAY	4 PIN 37cm	
44	1	A1007000001	FERRITE CORE	TR-16*9*28mm	
45	1	A1007000004	FERRITE CORE	T-28.3*13.8*13.5mm	